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ABSTRACT

A study of the transition of students to higher education in Victoria, Australia, is reported based on data supplied by the Victorian Universities Admissions Committee (VUAC), a mail survey of 1,300 applicants in 1980, and a series of extended interviews with a small number of applicants. A basic causal model for enrollment decisions (college choice and part- or full-time enrollment), and five elaborations on the model using data provided by VUAC are presented. These elaborations focus separately on the students' place of residence, performance on the Higher School Certificate examination, preference level of the final offer of courses made to the applicants, the type of institution making the offer, and type of course (discipline) offered. A final model incorporating the last three variables is then constructed. Detailed analysis of the individual, joint, and interactive effects of parental social status and ethnic background and the mediating and direct effects of the social-psychological factors using the survey data follow. The final chapter focuses on deferring and declining the final course offers, and summarizes the variables' effects on the students' enrollment decisions. Brief case studies are introduced for illustration. (MSE)

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ACER Research Monograph No.14

FROM SCHOOL TO TERTIARY STUDY: TRANSITION TO COLLEGE AND UNIVERSITY IN VICTORIA

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PREFACE AND ACKNOWLEDGEMENTS

This monograph is the first report of a study of the transition of students to tertiary education in Victoria carried out under the Commonwealth Tertiary Education Commission's Evaluative Studies Program. Work on the study commenced in August, 1980 and the project terminated at the end of March, 1981 when the first draft of the report was submitted.

The study is a multi-faceted one involving analysis of data supplied by the Victorian Universities Admissions Committee, a mail survey of about 1300 applicants for places in tertiary education in Victoria in 1980, and a series of long personal interviews with a small number of applicants. All members of the research team collaborated on each of the three aspects, but individuals worked closely on particular sections of the project. Gerald Elsworth and Neil Day were responsible for overall co-ordination of the project. Elsworth undertook the analysis of the data supplied by the VUAC and is the principal author of Chapters 1, 3 and 4. Day, who had overall responsibility for the mail survey, is the main author of Chapters 2, 5 and 6. The overview of the study in Chapter 7 was written by Elsworth and Rosalind Hurworth. Jana Andrews, who left the project in January 1981, was responsible for bibliographic research and assisted in compiling the questionnaire. Hurworth and Andrews did most of the analysis of open-ended comments on the questionnaire, undertook the editing and coding of the questionnaire responses and jointly conducted the long personal interviews with a small group of selected applicants. The data were punched by Ms Geraldine O'Connor and Ms Amanda Lee who also assisted with coding and setting up the data on the Melbourne State College VAX II computer.

A report of this nature is the result of the work of many people besides those directly involved in the research team. We should like to acknowledge with gratitude the assistance of the following people.

The Secretary of the Victorian Universities Admissions Committee (VUAC), Mr Trevor Short, and two officers of the Committee, Mr John Ward and Mr Andrew Rothfield, cooperated closely with the project in making the file of VUAC data available, assisting with the selection of the sample, and supervising the mailing of questionnaires and reminder letters in such a way that the privacy of the applicants was protected. But beyond these tasks which were essential to the success of the survey, the officers of the VUAC were always ready to answer any request for assistance and helped to ensure that the project, working to a tight schedule, went ahead smoothly.

Our questionnaire was developed in cooperation with Professor David Beswick and Mr Martin Hayden of the Centre for the Study of Higher Education at the University of Melbourne who are carrying out a longitudinal study of transition to post-secondary education in Victoria and Western Australia for the Commonwealth Department of Education. We also benefitted greatly from discussion and advice on questionnaire design, and sample selection and weighting from many of the staff of the Australian Council for Educational Research; particularly John Ainley, Warren Jones, Ken Ross and Trevor Williams.

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Finally, we wish to thank Diane Collaga who typed many drafts of the data tables and manuscript, Margaret Elsworth who drew the graphics and Mary Crook of the Melbourne State College Publishing Department who typeset this monograph.

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CHAPTER 1

A STUDY OF TRANSITION TO TERTIARY EDUCATION IN VICTORIA

Introduction

This is a study of the transition to tertiary education of young people in Victoria. The aims of this study are:

(i) to describe the social and educational characteristics of those students who commence tertiary studies compared with those who do not;
(ii) to develop a casual model of the transition from school to tertiary study;
(iii) to describe the manifest reasons students give for not accepting the opportunity of tertiary study.

Most studies of transition to tertiary education focus on a single outcome variable. This variable might be expectations of further study, a dichotomous indicator of whether or not a person has ever attended college or university, or simply the number of years of further education achieved. For a complete analysis of transition to tertiary study in Australia, however, we believe that it is profitable to regard transition as a series of discontinuities in the individual's educational history (Featherman and Carter, 1976). If an analysis were to commence with a cohort of Year-12 students, indicators of these discontinuities could include completion of Year-12, application to a college or university, receipt of an offer, acceptance of the offer and delayed entry.

An analysis of transition based on the notion of educational discontinuities would allow a distinction to be made between factors which affect a student's **eligibility** to enrol and those which affect **self-selection** into tertiary education. Thus completion of Year-12 and receiving an offer of a college or university place are aspects of eligibility, while the decision to apply and to accept or reject the offer of a place are aspects of self-selection. Later we will argue that an adequate analysis of equality of opportunity in higher education requires a consideration of both these aspects of transition. In our present study, we were particularly interested in the social and personal factors which influence transition. We therefore chose to control the effect of eligibility to enter a college or university and to focus specifically on self-selection at the final barrier to transition: the student's decision to accept an offer of a tertiary place and to continue studying either full- or part-time rather than to decline or defer the offer.

Some Theoretical Background

We view students' decisions on whether or not to go on with higher education as a critical point in the process by which they achieve adult socio-economic status. Our study is not, of course, directly concerned with an understanding of the structural, psychological and educational factors that lead to particular occupations or levels of adult earnings. We regard decisions about higher education as central to the process, however, and have organised our variables in a manner which reflects this theoretical orientation. Thus our style and methods of research derive directly from the major American and (more recent) Australian studies of status attainment across the life cycle. We are particularly indebted here to the work of William Sewell and Robert Hauser in America (see, for example, Sewell and Hauser, 1975) and Trevor Williams in Australia (Williams, Clancy, Batten and Girling-Butcher, 1980) and we have borrowed extensively from their theoretical perspectives, applications of the method of path analysis and manner of presentation of results as models for this study.

Our dependent variable, then, is the students' decision whether or not to proceed from the final year of secondary school to an undergraduate degree or diploma course in a college or university. That is, we are concerned with transition to **tertiary** study, and we

TABLE 1:1
INDEPENDENT VARIABLES FOR A STUDY OF TRANSITION TO TERTIARY EDUCATION IN VICTORIA

Biographical Variables	Year 12 Achievements	Social-Psychological Factors	Characteristics of the Offer
Sex	Year 12 course	Perceived costs of tertiary education	Preference level
Age	Year 12 result	Perceived benefits of tertiary education	Type of Institution
Family Variables		Influence of significant others	Type of Course
Socio-economic status		Academic expectations	
Ethnicity			
Home location			
School Variables			
School type			

have not included in our definition other forms of **post-secondary** study such as technical certificate courses, hospital nursing courses and institute accountancy courses.

The independent variables, which we hypothesise will influence these transition decisions are largely derived from status attainment research (see Table 1:1). Firstly, we consider a number of **ascribed** influences; characteristics of the individual students or their environment which are (at least largely) determined by the circumstances of their birth or by their family environment. We include among these influences the students' sex and age, the rural or urban location of their home, the socio-economic status of their parents and the country of their parents' birth, and (more tentatively because in some instances this factor is clearly the result of the student's own achievement) the kind of school attended.

Next, we consider two factors which are **achieved** by the students during their secondary schooling as a result of their intelligence, abilities, aspirations or effort. These factors, in turn, can influence the students' educational decisions. They are the kind of course the students took during their final year of secondary school and the result of their final year examinations.

Thirdly, we consider another group of **achievement** factors; three aspects of the offer of a tertiary place made to the students by a college or university. These are the type of offering institution, the type of course offered and the level of the student's preference for the offer finally received.

Fourthly, we consider a group of social-psychological variables which are likely both to influence the kinds of institutions and courses the students applied for (the second group of achieved characteristics) and their decisions about whether or not to accept the offer of a place. We are particularly interested here in perceptions of the costs (both economic and those stemming from personal effort) and benefits (both economic and status) of going on to college or university, the perceived encouragement of parents, teachers and peers, and the students' self-perceptions of their interest in and ability to undertake further study.

We have arranged these variables into a causal sequence which represents our theory of the factors which influence transition to higher education. We define the ascribed characteristics as **predetermined** (or exogenous) variables in the sequence. That is, we regard any analysis of causal interrelationships among these variables as irrelevant to an

understanding of the process of transition to higher education. (A possible exception is the extent to which the type of school attended is influenced by other predetermined variables in the sequence and in turn influences the students' educational decisions. That is, it sometimes would be reasonable to regard school type as an achieved characteristic which might, for example, mediate relationships between socio-economic status and educational decisions. We present analyses based on this reasoning in Chapter 5.)

Next we hypothesise that the ascribed characteristics are the important causes of the first group of achieved characteristics; the type of final year courses taken by the students and their final year results. That is, we define year-12 course and year-12 results as the first block of **mediating** (endogenous) variables in our causal sequence. It is immediately apparent, however, that we have not included all the possible important causes of 12th year course and 12th year results. Clearly, other possible independent causal influences on both course and results are the student's general intelligence, specific abilities and academic interests. As we have no way of estimating these variables we have not included them in the causal sequence, and to that extent any model based on this sequence of variables is **mis-specified.**

For our purpose here of investigating relationships between the students' enrolment decisions and the various predetermined and achieved characteristics which might influence them, we do not believe, however, that the mis-specification represents a particular problem. This is because we believe that any influence of intelligence, specific abilities or academic interests on enrolment decisions will be carried by the nature of the students' 12th year courses and 12th year results.

We will present, in Chapters 3 and 4, analyses in which 12th year course type and 12th year results are, themselves, arranged in a causal sequence with results as the dependent variable. These analyses show that, at least for the year our data were collected, science students achieved the highest year-12 aggregate scores independent of sex, age and school type, followed in order by humanities students, commerce/social-science students and those taking a "mixed" 12th year course. (This part of the analysis was for HSC students only.) In explaining these results a common claim, but one we cannot either support or refute, is that science students are simply brighter than others. That is, the absence of a measure of general intelligence in our sequence of variables is crucial to any conclusion that the type of course taken at year-12 has a direct or independent effect on the students' results. Thus we cannot reasonably claim that any relationships which exist between year-12 course types and results are not **spuriously** caused by a third unspecified variable (intelligence). We believe, however, that it is unlikely that there will be further spurious relationships between course type and results on the one hand and enrolment decisions on the other which should also be properly attributed to intelligence. That is, we assume that any effects of intelligence on enrolment decisions will be completely mediated by 12th year course type and results.

We introduce two blocks of factors at the next stage of the causal sequence. These are the block representing details of the offer of a place made to the student, and the block representing the diversity of social-psychological factors. We are interested in these blocks of variables for two reasons. First, we wish to know how these variables might mediate the influence of those which precede them in the sequence. For example, we wish to address such questions as: "To what extent is the influence of socio-economic status on enrolment decisions mediated by perceived parental encouragement to continue with higher education?" and, "To what extent is the effect of 12th year achievement mediated by the type of institution making an offer of a place and the student's preference for the particular course offered?" Second, we wish to know what the direct influence of these factors on enrolment decisions might be over and above the biographical, family, school and early achievement variables specified previously. As we have suggested earlier, we are uncertain of the possible causal relationships between variables in these two blocks (almost certainly they are to an extent reciprocal) and thus they are arranged coinciden-

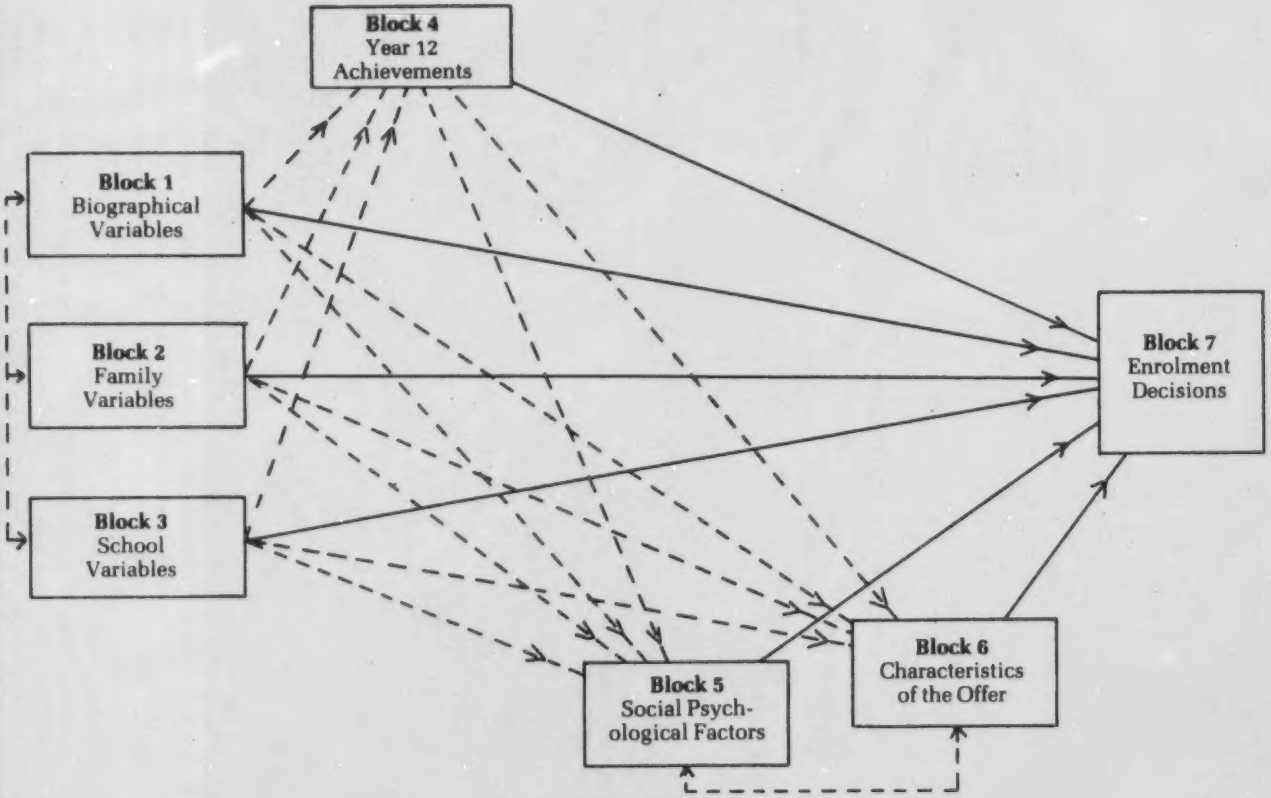


FIGURE 1:1
A MODEL OF TRANSITION TO TERTIARY EDUCATION IN VICTORIA

tally rather than sequentially. We should also note that this monograph does not contain a detailed analysis of the causal influences on either the characteristics of the offer to the students or their perceptions of social-psychological influences. This is not to say that we don't regard such analyses of interest and importance. We have avoided them only in the interests of a relatively concise and clearly focussed argument.

Thus, in summary, we propose that students' enrolment decisions can be explained satisfactorily by five important blocks of variables arranged in three steps in a causal sequence. At the first level of the sequence we hypothesise that the students' sex and age, family characteristics and school attended will have independent effects. Secondly, we hypothesise that the type of 12th year course taken and the students' results in that course will have both independent effects and will mediate some of the effect of the predetermined variables. Last, we hypothesise that characteristics of the college or university place offered to the students, and a group of social-psychological factors, will again have independent effects on enrolment decisions and will mediate some of the effect of variables preceding them in the sequence.

These hypotheses are represented diagramatically in Figure 1:1. Technically, this diagram represents a block recursive causal model (or path model). The double-headed arrows in the model represent correlations between blocks of variables which we will not generally analyse for causal relationships. Also, with the exception of year-12 course and year-12 results, variables within each block will not be treated causally. The single-headed arrows represent direct or indirect causal paths we hypothesise are important in determining students' enrolment decisions. The broken lines represent associations or effects we assume exist but which we do not present or discuss in detail. Thus, we will be particularly concerned with the direct effects we have indicated by continuous single-headed arrows. We will be interested also in the extent to which these direct effects are reinforced by effects which pass through subsequent variables in the model.

Policy Implications of Transition Research

In the remaining chapters we focus much of our attention on specifying the relationships between the variables in models similar to that illustrated in Figure 1:1. Our general strategy is to present our data from the viewpoint of the group and individual inequalities which exist at this final barrier to transition to tertiary education. By group inequalities we mean the differences which are due to ascribed characteristics; sex, age, family socio-economic status, ethnic origins and school attended. By individual inequalities we mean individual differences in enrolment decisions associated with different achievements and perceptions (attitudes and expectations).

All the students we discuss are eligible to go on to tertiary study in the sense that each has been offered a place. Therefore, on academic criteria, if differences in the desirability of particular institutions and courses of study are disregarded, tertiary education is equally available to all of them. However, the term 'equally available' contains hidden ambiguities arising from the fact that the criteria used to judge 'availability' may vary. From the perspective of the educational researcher or policy-maker, the foremost criteria of availability may be the extent to which formal educational or institutional barriers obstruct access to education (see, for example, Husén, 1976). For example, it might be argued, on criteria which are generally labelled 'meritocratic', that the sole grounds for determining availability of tertiary education should be the applicant's demonstrated academic ability and, perhaps, diligence. Thus, any educational system or institution where there were no legal or informal obstacles to enrolment, apart from those based on academic ability, might be regarded as equitable. Conversely, in order to be judged **inequitable** by these meritocratic criteria, particular individuals or groups would have to be excluded by legislation, regulation or administrative fiat on non-academic grounds as, for example, many were excluded from Oxford and Cambridge Universities up to the

1850s because they would not subscribe to the Thirty-nine Articles of the Church of England. Such meritocratic criteria on which to judge inequalities of opportunity are of limited utility for an analysis of tertiary education in the present day.

In contast, we argue that a more useful test of the equal availability of opportunity is to take the perspective of the consumer, and to examine the extent to which places in tertiary education are taken up by students from all backgrounds. From the point of view of students taking the decision on their educational future, the criteria for the availability of an opportunity may well include wider considerations such as the distance of the college or university from the hone, the anticipated financial costs of study, or, indeed, the perceived academic and social accessibility of the institution or course offered. As all the students we discuss have the 'opportunity' to take up tertiary education in the sense that there is no academic obstacle to their admission, we regard the actual decisions taken by the students as the best indicator of what they perceive as 'available' to be chosen. If differences in the rate of acceptance of offers are found to correlate with sources of social disadvantage such as sex, home location, socio-economic status or ethnic origins then there are manifest inequalities in the **availability** of tertiary education as **perceived** by students. And, for the reasons outlined above, we regard such discrepancies in the rate of accepting offers as indicating serious inequalities in the **provision** of tertiary education. Our viewpoint is well summarised by the historian R.H. Tawney who drew a distinction between equality in legalistic terms and equality in practical terms:

> The character of a society is determined less by abstract rights than by practical powers. It depends, not upon what its members *may* do, if they can, but upon what they *can* do if they will. All careers may be equally open to all, and the wage-earner, like the property-owner, may be free to use such powers as he possesses, in such ways as he is able, on such occasions as are open to him, to achieve such results as he is capable of achieving. But, in the absence of measures which prevent the exploitation of groups in a weak economic position by those in a strong, and make the external conditions of health and civilization a common possession, the phrase equality of opportunity is obviously a jest, to be described as amusing or heartless according to taste. (Tawney, 1964:110)

Tawney, writing in the early 1930s, was particularly concerned with the socio-economic roots of inequality. However, his argument is equally pertinent to discussions of access to tertiary education. Legal access is a necessary condition for equality of opportunity, but in itself it is not a sufficient condition. The provision of tertiary education must be judged inequitable if there are group differences in the extent to which academically eligible individuals choose to enter.

For these reasons we believe that the results of our research carry important implications for educational policy review and development. Further, our methods of analysis suggest certain areas for policy initiatives which could ameliorate the group inequalities that we have uncovered. For example, the effects of the ascribed variables (sex, home location, socio-economic status and ethnicity) may be considered as being comprised of two components. The first component is those effects which are directly and unambiguously due to the background factors in themselves. The second component consists of those effects which are due to the association of our ascribed variables with other variables specified later in our causal model. For example, we argue that a good part of the effect of the ascribed characteristic of sex is due to sex differences in the attitudes and perceptions shown in the block of social-psychological variables later in the model. These mediated effects of sex we term **indirect**, to distinguish them from those **direct** effects which appear to be due to sex differences **per se**.

It seems unlikely that the direct effects of the biographical characteristics or family backgrounds of students will be amenable to change through educational policy interventions. However, it is the variables located later in the model, many of which have important roles in mediating the indirect effects of the ascribed variables, which most

valuably can be the focus of policy. If inequalities in access to tertiary education do exist between males and females or among urban and rural dwellers for example, it is the indirect effects of these inequalities which are mediated by the schools and tertiary institutions, or by the students' perceptions of the educational system, that show the paths along which inequalities can be attacked.

Finally, we wish to point out that the policy significance of causal effects is not necessarily proportional to their relative magnitudes. There are normative considerations in the study of group inequalities that do not necessarily arise in the case of individual inequalities. Firstly, the social values dominant in Australian society may well endorse educational discrimination on the basis of past academic achievements and certain attitudes and expectations, but not on the basis of sex or family background. Secondly, in as much as greater access to tertiary education could serve to reduce other social disadvantages suffered by certain groups, inequalities in access which favour these groups might be endorsed.

Sources of Data

Our study was designed as an exploratory investigation of the effects of the biographical, socio-economic and educational backgrounds of students on their transition to tertiary education. We were also interested in the extent to which these ascribed and early achievement characteristics of students were mediated in their effect on enrolment decisions by the nature of the tertiary place offered, and by a variety of social-psychological factors. Finally, we wished to describe students' expressed reasons for making a choice one way or the other and to develop an understanding of the interests, motives, attitudes and self-perceptions which might underpin these reasons. Thus our study is both descriptive, and analytic and interpretative. Further, it was designed to provide timely information in a format which might conveniently form the basis for policy development and review.

We recognised that the most appropriate research design for a study with the aims we have outlined would be a longitudinal survey commencing with a national sample of 12th year (or perhaps even better) 10th year secondary students and following the methodology established by the major American studies of status attainment. Principally because of time and cost considerations, however, we undertook a cross-sectional survey of students from the immediately preceding year of transition. While this strategy enabled us to gather data from a single survey, it entailed a number of difficulties, mostly due to the fact that we planned to survey young people some 9 to 12 months after they had left school.

One research design we considered was to define our population as those students who satisfactorily completed the final year of secondary school in 1979; then to develop a two-stage sample (students within schools) from this population and to approach individual schools for the home addresses of the sampled students. We rejected this option, however, on a number of grounds. Firstly, within a reasonable allocation of resources to the study we would have to sample narrowly at the level of schools. The consequent clustering of students within schools on many important variables (e.g. parental social status, Year 12 achievement) would result in a loss of statistical power that we thought might be intolerable for an exploratory study which would inevitably involve many variables. Secondly, we were not entirely confident that we could obtain an adequate level of cooperation from schools which we would be pressing for detailed clerical information at a difficult time of the year. These problems could cause complications with sampling or, we felt, a lowered and non-random response to our proposed survey.

Our alternative strategy was to define as the population of interest those students who applied for a place in a tertiary institution in 1979–80 in a single State and to seek the cooperation of the centralised admissions authority in contacting the applicants. The Victorian Universities Admissions Committee (VUAC), the centralised admissions au-

thority in Victoria, was appropriate for our purpose. It had been established for a number of years and thus had systematic and comprehensive computer-based record-keeping and, for 1979, processed applications from all Victorian universities and colleges of advanced education (CAEs) except for three small teacher's colleges affiliated with the Institute of Catholic Education, the four Victorian agricultural, horticultural and forestry colleges and the Victorian College of the Arts. In 1979, the VUAC processed applications from about 80% of students who presented for the Victorian Higher School Certificate examination (HSC) in the year of application and about 50% of students who studied a technical college Tertiary Orientation Program (TOP).

Our proposed population did not, therefore, completely encompass all those students who completed Year 12 studies in Victorian schools in 1979. Clearly we would not sample from HSC students who had no intention of further study or who had a single intention to study in an institution outside the VUAC system (interstate, for example, or a Catholic teachers' college, an agricultural college, or a Technical and Further Education (TAFE) college). Also we would not be able to sample from many TOP students who continued on in their previous TAFE college or in a CAE linked to a TAFE college. Therefore our study would not be able to offer perfectly accurately estimates of transition rates of various categories of students, even for Victoria.

On the other hand, many applicants through the VUAC reject or defer their offers. A sample drawn from a VUAC population of HSC and TOP students who had expressed some intention of going on to college or university (and who, by receiving an offer of a place, were qualified to do so) would therefore enable us to make reasonable estimates of the relative importance of various social, economic and social-psychological factors in the students' decisions whether or not to go on.

The VUAC was agreeable to our request to forward questionnaires and reminder letters to a sample of 1979–80 applicants for college and university places. In addition, the Committee agreed to give us access to the non-confidential parts of descriptive data on all applicants for that year. Thus we were able to make an accurate calculation of certain characteristics of the defined population of applicants as well as make estimates of a wider range of characteristics from our sample.

The VUAC Data

In 1979, thirty two thousand and seventy five people applied through the VUAC for places in Victorian tertiary institutions for the following year. These institutions included the four Victorian universities, six metropolitan multipurpose CAEs and two specialist paramedical CAEs, seven metropolitan colleges specialising largely in teacher education, and four multipurpose regional CAEs. All four regional CAEs in Victoria offer courses in teacher education, two as a consequence of amalgamations with former regional teachers' colleges.

The VUAC categorised applicants into two and then 17 groups. Initially, a distinction was made between 'N' and 'E' type applicants. 'N' type applicants were those who were applying for a place in tertiary education on the basis of a Higher School Certificate (HSC) completed under normal regulations. The largest group were N11 applicants. They were Victorian sixth form students who:

(a) as full-time scholars have 'passed' the HSC examination in one or more of the six years prior to the year of selection;
(b) have not made more than three full attempts at HSC;
(c) have not attempted any HSC subjects in more than four separate years;
(d) have not attempted any HSC subjects prior to the six years;
(e) do not claim exemption from the Victorian HSC on the basis of interstate or overseas examinations;

(f) have not . . . . previously attempted any form of tertiary education.
(Victorian Universities Admissions Committee, 1979)

Approximately 61.5% of applicants for places in 1980 were classified by the VUAC as N11.

There were applicants in three other N-type categories. They comprised only 3.2% of the total number of applicants. Those classified as N21 took their "last full attempt at HSC prior to 6 years before the year of selection"; made a "second full attempt at HSC where a minimum of six years break in schooling occurs between the two attempts"; made "more than three full attempts at HSC"; or made "attempts at HSC subjects in more than four years". N25 applicants were those who studied a Victorian HSC overseas, and N27 applicants were those who, while having satisfied university entrance requirements, applied for special consideration.

Offers were made to all 'N-Type' and many 'E-Type' applicants on the basis of an aggregate HSC score, except for those who applied for a small number of courses where auditions, folios or interviews were also required. Other 'E-Type' applicants were assessed separately and individually by institutions. In 1979–80 the 'E-Type' applicants included those taking HSC under 'mature-age' or 'part-time' regulations, those with 12th year qualifications considered equivalent to the Victorian HSC (including the Victorian Tertiary Orientation Program (TOP) and approved interstate and overseas 12th year studies), those with complete or incomplete tertiary studies, and those without 12th year studies or whose studies were not considered equivalent to the Victorian HSC for purposes of university entrance. This latter category included one specific group of students who had studied a school-based 12th year course assessed internally by the school.

We wished to define from this diverse group of applicants a population of young people whose homes were in Victoria and who, having completed Year 12 secondary school studies, applied for, and were offered a place in tertiary education for the first time. We approximated this by selecting from the VUAC group those students who were 24 years old or younger on December 31st 1979 and who were classified by the VUAC (on the basis of a specific question on the application form) as having a home address in Victoria. We then selected only those students who fell into the following categories of applicants:

(i) N11 – Full-time students in one of the 6 years prior to selection as we have previously detailed
(ii) N21 – Applicants with an 'old' HSC, or multiple attempts as we have previously detailed
(iii) N25 – Victorian HSC taken overseas
(iv) N27 – Special consideration applicants
(v) E12 – Part-time HSC students in full-time employment
(vi) E21 – Victorian TOP applicants
(vii) E51 – Applicants with school based qualifications

Finally, we selected only those students who had received an offer of a place in a college or university through the VUAC system.

By this procedure we defined a population of 16,173 young people who had shown interest in tertiary education and who **generally** were direct from school or part-time study of Year 12 subjects. A little over 85% of these applicants were classified by the VUAC as N11 and an additional 13% were in the group who had studied the Victorian technical schools' TOP. Each other entrance category included represented less than 1% of this population.

A file of raw data on twelve variables for this population was made available to us by the VUAC. These data included the variables listed below.

(i) Applicant type. One of the seven categories described above.

(ii) The applicant's sex.
(iii) Postcode of the applicant's address. For most, this variable was derived from a question on the application form which invited students to check the home address already printed on the form and "if the address above is incorrect or unsuitable for correspondence between (the period during which offers are made and processed) write the correct address in these boxes." While undoubtedly there will be some error, we regard this variable as approximating the postcode of the applicant's home address.
(iv) The applicant's year of birth.
(v) The location of the applicant's "permanent home." This variable was derived from a separate question on the application form which asked for "permanent home location" as either Victoria, Interstate or Overseas.
(vi) The applicant's response to the final VUAC offer made. The response was coded as accepted and enrolled full-time, accepted and enrolled part-time, deferred and declined (or failed to respond).
(vii) The preference number of the final offer made by the VUAC. This number ranged from 1 to 9. The application form contained space for up to 8 preferences. The "9th" preference was coded if the student negotiated a place with an institution directly and received an offer of this place from the VUAC. In order to accept a negotiated offer of this kind the possibility of receiving a further offer must be revoked by the applicant.
(viii) The specific course and institution accepted.
(ix) The applicant's best-four score. This score was computed by the VUAC specifically for this project. It is the simple sum of the scores of the four best subjects taken by each applicant at their final attempt at HSC. Only N-type applicants who had attempted four or more subjects at their last attempt at HSC were scored.
(x) School-code. A numeric code indicating the school attended when the applicant last studied for HSC, the TOP or another Victorian Year 12 qualification.
(xi) In preference order, the eight or fewer courses listed on the VUAC application.
(xii) The subjects taken at the applicant's last attempt at the HSC examination or during a TOP year.

After recoding some information, the VUAC data provided us with the following variables specified in our causal model:

(i) The applicant's sex (Block 1 of the model);
(ii) The applicant's age in years at December 31, 1979 (Block 1);
(iii) The applicant's home location (Block 2);
(iv) The type of school attended when the application for a college or university place was made (Block 3);
(v) For HSC students only, the best-four aggregate score (Block 4);
(vii) The type of institution which made the **final** offer of a place to the student (Block 6);
(viii) The type of course finally offered (Block 6);
(ix) The preference level of the final offer (Block 6);
(x) The four category variable representing the outcome of the offer (Block 7, the dependent variable. In our analyses this four category variable is on occasions, recoded to two categories; 'Take Up' offer and 'Turn Down' offer).

The Questionnaire

The questionnaire was designed to obtain additional information on transition variables from a sample of VUAC applicants drawn from the population we have defined previously. That is, the target population for the survey study was the group of non-mature age Victorians whose applications to the VUAC were based on a completed HSC, TOP or school-based qualification and who were offered a place in a Victorian tertiary institution for 1980.

TABLE 1:2
DISTRIBUTION OF THE TARGET POPULATION AMONG CATEGORIES OF ENROLMENT DECISIONS

	All		Other than TOP		TOP	
	N	%	N	%	N	%
1. Accept full-time	10792	66.7	9320	66.4	1472	69.1
2. Accept part-time	347	2.1	305	2.2	42	2.0
3. Declined	3023	18.7	2588	18.4	435	20.4
4. Deferred	2011	12.4	1829	13.0	182	8.5
TOTAL	16173	100.0	14042	100.0	2131	100.0

The possible outcomes of the application and subsequent offer of a tertiary place for those students in the target population were: place accepted full-time, place accepted part-time, place declined, and place deferred. The proportions of the target population in each of these four categories are shown in Table 1:2. Had we selected a simple probability sample from the population it is clear that certain groups of interest would have been included in the sample only in very small numbers. For instance, if we had selected a simple 1 in 10 sample from the population, TOP students and those who accepted part-time would have been represented in numbers too small to permit satisfactory analysis.

Since one of the principal tasks of the investigation was to explain the differences in enrolment decisions made by the VUAC applicants it was important that estimates of the characteristics of applicants should be equally accurate for each of the four decision categories. This would be achieved best by obtaining approximately equal numbers in each category. Further, we were also interested in TOP students as a separate group. In order to achieve reasonable accuracy when their data were analysed separately we calculated that it was also necessary to include a disproportionately large number of applicants from this group. These procedures would result in a sample in which the proportions of applicants in the decision categories, and in the TOP/not TOP group, were quite different from the population. The numbers within each of these categories were known for the total population from the data supplied by the VUAC. It would be possible, therefore, to apply weights to the sample numbers so that the proportions within each category would correspond exactly to the population data. Calculations of the sampling errors involved showed that we could achieve reasonable accuracy overall with a sample of approximately 300 in each category of enrolment decision, and that estimates for the TOP group separately would be acceptable if 25% of the total sample were TOP applicants.

Two additional problems arose from our requirement of approximately equal numbers of respondents from each category of enrolment decision. Firstly, we anticipated that response rates to our survey would differ between the decision groups. We therefore decided to approach slightly larger numbers of applicants who deferred and declined in order to gain approximately equal numbers in each of the four categories despite the anticipated differences in response rate. Secondly, it can be seen from Table 1:2 that the absolute number of applicants who enrolled part-time is very small. In order to achieve satisfactory precision of sample estimates it would have been necessary to survey such a large proportion of this group that we decided to include all applicants who accepted part-time in our target sample.

TABLE 1:3
SAMPLING DESIGN FOR THE QUESTIONNAIRE STUDY

	Accepted full-time			Accepted part-time			Declined			Deferred			TOTAL
	ALL	NOT TOP	TOP	ALL	NOT TOP	TOP	ALL	NOT TOP	TOP	ALL	NOT TOP	TOP	
1. Number in Population	10972	9320	1472	347	305	42	3023	2588	435	2011	1829	182	16173
2. Percentage of Each Group in Population	66.7%	57.6%	9.1%	2.1%	1.9%	0.3%	18.7%	16.0%	2.7%	12.4%	11.3%	1.1%	
3. Number Selected in Sample	400	300	100	347	305	42	500	375	125	500	375	125	1747
4. Anticipated Response Rate	75%	75%	75%	75%	75%	75%	60%	60%	60%	60%	60%	60%	66.4%
5. Number of Anticipated Respondents	300	225	75	260	229	31	300	225	75	300	225	75	1160
6. Number of Actual Respondents	351	268	83	226	200	26	332	259	73	385	297	88	1297[a]
7. Actual Response Rate	87.8%	89.3%	83.0%	65.1%	65.6%	61.9%	66.4%	69.1%	58.4%	77.0%	79.2%	79.4%	74.2%

Note: a. includes 3 cases where information on the enrolment decision was missing.

Data which relate to the sampling design are presented in Table 1:3. The data include the anticipated response rate, the numbers of questionnaires sent out in each category, and the numbers and percentages of respondents. Our calculations of errors were based on an anticipated overall response rate of 66.4%. The actual response rate was 74.2%. Applicants who had accepted their VUAC offer and enrolled full-time responded well to the questionnaire, however, the response from those who enrolled part-time was low. The response rate from former TOP students was also consistently lower than that of the group of HSC and school-based students.[1]

A copy of the questionnaire is presented in Appendix 1. The original mailing to the sample also included a covering letter from the VUAC, a stamped return envelope (not a postage paid or "free post" return) and a 'T-shirt' transfer as a light-hearted gift. A reminder letter was posted to non-respondents approximately 3 weeks after the first mailing. This was followed after another 4 weeks by a final mailing which contained a further reminder letter, another copy of the questionnaire and a stamped return envelope.[2]

The questionnaire was designed to provide the data listed below.

(i) A replication of the data previously described as available from the VUAC file. Thus, the questionnaire contained items relating to the applicant's sex, age, home location, type of school last attended, 12th year subjects studied, 12th year results, the course and institution finally offered through the VUAC, and the preference level of the offer.

(ii) Information on the applicant's family background. Thus the questionnaire contained items requesting details of the parents' occupation and education to define socio-economic status (Block 2 of the causal model) the ethnic background of parents (Block 2) information on family position and the educational achievement of siblings.

(iii) Information on a range of social-psychological variables. This included, particularly, questions relating to the perceived benefits of further education (job opportunities, income, interesting occupations and job status) the perceived costs of tertiary education (the problem of financial support, sources of finance, demands of studying, inconvenience of the institution) the perceived influence of others (parents, teachers, peers) and expected performance and interest in the course offered. These questions were designed to measure the constructs in Block 5 of the causal model. In addition, information was sought on whether and where the applicant was studying or working, the stability of the applicant's educational plans, anticipated further study, and the occupation desired in 10 years' time.

The questionnaire was constructed to obtain the applicants' 'objective' report of each social-psychological factor, a subjective assessment of the strength of its influence on enrolment decisions, and the direction of this influence. An open-ended question was also included for applicants to elaborate on the factors which influenced their decision on the VUAC offer. These questions, together with a small number of interviews, were designed to provide information on the students' expressed reasons for taking up or turning down the offer from the VUAC; to provide an alternative, 'illuminative' perspective on transition.

Data for an Illuminative Perspective on Transition

To illuminate findings from the analyses of the VUAC data and the structured part of the questionnaire the opportunity was given to the respondents to explain, in their own words, the most important factors which influenced their educational decisions. Approximately 75% of respondents took the opportunity to give us extensive comments on the questionnaire. In addition, structured but freely ranging interviews were conducted with fifteen young people who had previously responded to the questionnaire.

As the focus of this part of the study was on the reasons for deferring and declining, the analysis of open comments and the interviews concentrated on respondents who had turned down their VUAC offers. All the open comments made by respondents were read and salient quotations recorded. Additionally, all comments from country applicants and those made by a sample of 1 in 3 city applicants were subjected to a more formal content analysis in which the major reasons given for deferring and declining were recorded and coded.

The applicants who were selected for interview had made written comments on the questionnaire which suggested that they would make valuable case studies. They also represented a variety of home locations, career fields and reasons for deferring or declining. Fifteen interviews were conducted, 9 with metropolitan applicants (5 males and 4 females) and 6 with country applicants (3 males and 3 females). The metropolitan respondents who volunteered were interviewed personally and were given reimbursement of their expenses; the country applicants were interviewed by telephone. When permission was granted, interviews with metropolitan applicants were tape recorded. The country group, although small, represented a wide area of rural Victoria, ranging from Warnambool in the South West to Albury-Wodonga in the North East and from Hopetoun in the North West to Leongatha in the South East.

A structured set of questions was used for each interview and details of family backgrounds, schooling, career plans, educational plans and financial considerations were discussed with each person. While respondents were directed to these particular topics, every opportunity was given for them to talk freely and frankly. Anonymity was guaranteed. Each personal and telephone interview took about 45 minutes.

The Structure of the Remaining Chapters

In the remaining chapters we present and discuss our data in a series of gradually more complex causal models of transition, commencing with a 'basic model' to which we add variables (not cumulatively) in sets as we seek to elaborate, extend and explain our previous findings. We will not present, at any point, a composite causal model based on all our data sources. As our topic and results are complex, we believe that they can be understood best by a gradual elaboration through an analysis and presentation of successively more complex models, rather than by backtracking through the effects in a sophisticated total model.

To this end we focus much of our attention on partitioning the effects in our causal models into those that are direct (net of all other variables in the model) and those that are mediated through the achievement and social-psychological variables. In Chapter 2 we attempt to develop an intuitive understanding and interpretation of the important statistics provided by multiple linear regression, our principal method of analysis. In this chapter we also define the terms total effect, direct effect and indirect effect (and some other varieties of effect as well) and show how presentation of these different effects through successive elaboration of a structural model leads to a meaningful causal analysis.

In Chapter 3 we present our 'basic' causal model and examine the net and mediated effects on enrolment decisions in the model. This model is estimated from the VUAC data and contains only six predictor variables as well as various contrasts among the applicants' enrolment decisions. The predictor variables are the applicant's sex, age, home location, school type, HSC course type and HSC aggregate score.

In Chapter 4 we present five elaborations of this basic model again using the data supplied by the VUAC. Two of the elaborated models are derived from a more detailed coding of the applicant's home location and HSC course while the other three introduce, independently, our information on the preference level of the final offer made to the applicant, the type of institution making the offer, and the type of course offered. We also

build a model in which these later three sets of variables are introduced hierarchically to examine the full extent of their mediating effects on prior variables.

A detailed analysis of the individual, joint and interactive effects of parental social status and ethnic background is presented in Chapter 5. Here we use data from the survey for the first time and focus only on the basic contrast between the enrolment decisions of accept full-time or part-time on the one hand as against decline of defer on the other. Similarly, Chapter 6 presents analyses of the survey data to explore the mediating and direct effects of the social-psychological factors on the basic enrolment decision. Here we estimate the full extent to which social-psychological factors influence decisions and focus also on four particular constructs: the perceived benefits of a tertiary education (both economic and status), the perceived costs (economic), the influence of significant others and the applicants' academic expectations.

Chapter 7 is focussed on deferring and declining. It contains a short summary, taken variable by variable, of the effects on enrolment decisions which we have elaborated in previous chapters. These summaries form an introduction to some brief case studies in which we use both questionnaire and interview responses to describe the influences and reasons applicants give for deferring and declining. Here we extend, and hopefully illuminate, the 'hard-nosed' and parsimonious analyses of previous chapters with the richer but more discursive and anecdotal evidence we have from responses to individual questionnaire items and the content analysis of open-ended questionnaire responses and interviews.

Notes

1. In Table 1:2, the numbers of applicants in each decision category are taken principally from the information provided by the VUAC. There were, however, some discrepencies between this indicator and responses to Question 6 on the questionnaire. A detailed inspection of each questionnaire showed that the VUAC enrolment indicator appeared to be in error in 28 of these cases. The figures in line 6 of Table 1:2 have been corrected to conform to the questionnaire responses of these applicants.

2. At this point it is appropriate to provide some further details about the procedure followed in the sample survey.

   The period of development and testing of the questionnaire ran from early August until mid-October 1980. The selection and wording of questions were influenced by questionnaires used in previous studies, and particular questions were modified so as to ensure comparability with a similar study being carried out by Professor David Beswick and Mr Martin Hayden at the University of Melbourne.

   The questions were extensively piloted during development using, in all but one case, VUAC applicants from years prior to 1979 as respondents. This was done in order to remove the possibility of trialling the questionnaire on a person who might also be selected in the main sample. Several of these trials were video-taped and respondents were invited to discuss their interpretations of questions and reactions to them as they went along. These video tapes were then reviewed and this led to a number of cycles of question revision, trialling and further question revision. The 'box' questions, numbers 11 to 24, required the most painstaking revision to wording and layout.

   As far as costs permitted, everything possible was done in all mailings to maximise the response rate. One general strategy was to personalise the approach to the students. Stamps were used on the reply-paid envelopes, the second reminder letters concluded with a brief handwritten message: "Thanks for any help you can give" or similar, and were personally signed. Generally, an informal and chatty tone was used in all communications.

   Another strategy was to emphasise the importance of the individual's responses, first for obtaining an unbiassed sample, and second for the opportunity each respondent had to make his views known in an important and receptive forum. Respondents were assured that their handwritten comments would be carefully read, and where possible, their individual views incorporated into the report.

The confidentiality of replies was stressed, and in fact the arrangements with the VUAC were such that the only information available to the research team was a serial number with the decision outcome coded into it. It was only under the supervision of the VUAC staff and at the VUAC premises that the name and address labels required for reminder mailings were stuck on the envelopes. Further, informants were invited to remove the serial number from the questionnaire if they wished. One hundred and three respondents did so, 7.9% of the total number.

Finally, a T-shirt transfer was enclosed with the first mailing as a token gift to respondents, to compensate them in small part for the considerable effort that each was requested to contribute to the survey. Over three-quarters of those responding provided extensive written comments in addition to answering the precoded questions.

In all, up to three mailings were sent to the selected persons. Wherever possible, names were removed from the mailing list after a reply to the questionnaire had been received. However, in cases where the serial number had been removed, it was not possible to avoid sending reminders to applicants who had already replied. A note explaining the reasons for this redundant contact was included in all follow-up letters. The dates of mailings and rates of reply are set out following:

24th October 1980: First mailing despatched containing questionnaire, stamped and addressed return envelope, letter from the VUAC and T-shirt transfer.

10th November: 53.2% of the final total number of questionnaires had been received by this date.

11th November: Second mailing despatched containing reminder letter.

27th November: 76.5% of the final total number of questionnaires had been received by this date.

28th November: Third mailing despatched containing questionnaire, stamped and addressed return envelope and reminder letter.

23rd December: 93.8% of the final total number of questionnaires had been received by this date.

2nd February, 1981: Final questionnaire to be included in data set received. Since 2nd February, four more questionnaires have been received, but not included in the analysis.

On receipt of a questionnaire, the serial number was recorded in a computer file which was used to give a continuous indication of response rates, and to compile the lists of serial numbers of those who had not replied. The questionnaire was then edited, open items coded, and the data entered directly from the coded questionnaire into the main data file. The data entry program, with extensive error checking facilities, was specially written for this job.

When data from 1255 of the final total of 1297 questionnaires had been punched, some limited data cleaning was undertaken and preliminary analysis begun. The cleaning was repeated after the compilation of the full data set. Given the timetable of the survey, it was not possible to check all possible errors and inconsistencies. However, it is doubtful whether further cleaning would be cost effective unless required for special purposes.

The data were analysed using the SPSS package of programs, although some analysis was based on specially written routines.

CHAPTER 2

A CAUSAL ANALYSIS OF ENROLMENT DECISIONS

The purpose of this chapter is to give the reader sufficient information about the statistical methods we have used to enable interpretation of the data tables in the following chapters. Our intention is to provide an intuitive grasp of the methodology and we do not undertake a thorough treatment of regression analysis and related topics.

We are seeking to explain the decision taken by the VUAC applicant on the final offer of a place in a college or university. We have two sources of information about this decision. From the data supplied by the VUAC we have information about the enrolment status of applicants at the end of March, 1980. For those applicants who replied to our questionnaire we also have their report of the decision taken on the final VUAC offer. In our analyses of the questionnaire data we used the VUAC information to define the dependent variables, except where responses to the whole questionnaire showed clearly that it was incorrect. As we have outlined previously there were four possible outcomes of the decision: accept full-time, accept part-time, defer, and decline. In our analyses we consider the following pairwise contrasts among these decisions:

(1) accept full-time or part-time as against defer or decline;
(2) accept full-time as against decline;
(3) accept full-time as against defer;
(4) accept full-time as against accept part-time;
(5) reject as against defer.

We refer to the first contrast as the 'two-way' decision. It is used to discriminate between those applicants who entered tertiary education in 1980 and those who decided not to. We base much of our discussion on this contrast and use the colloquial terms 'take up' and 'turn down' to describe the opposing decisions.

Throughout the monograph we refer to the 'effects' of certain variables such as sex and home location on whichever decision contrast is under discussion. By the term 'effect' we imply a causal relationship, although it should be acknowledged that statistical procedures can indicate only an association between two variables. It is up to the researcher to attribute a causal relationship to these associations on the basis of an **a priori** theory and a complementary research design. For example, we claim that home location has an effect on the decision taken on the VUAC offer. All our statistical analysis provides is a measure of association. From this we argue that rural home locations can **cause** students to be more likely to decline or defer their offer than urban home locations. The opposite causal path (i.e. that rejecting the offer causes a student to have a rural home location) is perfectly consistent with the statistics we provide, although this interpretation may be dismissed **a priori** on the basis of the temporal ordering of the variables involved. Care must be taken in using the temporal ordering of the variables in the life history of the individual to establish a causal connection in the absence of a true experimental design, however, and it is rarely a sufficient condition on its own.

Unfortunately, not all causal paths are so apparent as that from home location to enrolment decision. For example, in our theoretical model we hypothesise that school type in part determines the decision on the VUAC offer. This implies a causal path from school type to decision, and the temporal sequence of events in the educational experience of students appears to support this interpretation. It might be argued, however, that the decision about what type of school a student should attend is taken **in anticipation** of his likely enrolment in a course of tertiary study. That is, the relationship between school type and enrolment decision may be a spurious one, being determined by the continuing aspirations of the applicants' parents. The causal analysis of survey data thus relies crucially on the adequacy of the associated theoretical analysis as well as the temporal ordering of variables.

TABLE 2:1

THE GROSS EFFECT OF SEX ON TWO-WAY DECISION SHOWN BY TWO METHODS OF STATISTICAL ANALYSIS

(a) Crosstabulation

Decision	**Sex**		
	Male %	Female %	All %
Take up offer	76.1	62.9	68.7
Turn down offer	23.9	37.1	31.3
Total %	100.0	100.0	100.0
Weighted N	(444)	(574)	(1018)
Percentage point difference 37.1 − 23.9 = 13.2			

(b) Regression Analysis

Predetermined Variable	**Dependent Variable** Two-way decision (Turn down = 1 vs Take up = 0)
Sex (Female = 1 Male = 0)	.132

In the discussion above we have implied that there are several types of effects in a causal analysis. We now turn to an interpretation of the meanings of these different effects.

Gross Effects

Gross effects simply show the overall effect of one variable on another regardless of the influences of other variables. For example, Table 2:1 shows the simple (bivariate) relationship between the applicants' sex and two-way decision. Among male students, 76.1% took up the VUAC offer. Among females the proportion is 62.9%. (These estimates are taken from our survey data for HSC students.) Thus the number of males who took up their offer of a college or university place is 13.2 percentage points greater than the number of females.

In the following chapters we will generally present findings of this kind using unstandardised (or metric) regression co-efficients, as in the lower part of Table 2:1. Here we show the weight for the simple regression of decision on sex. Given that the dependent variable, decision, has the values 0 (for take up the offer) and 1 (for turn it down), the regression weight may be taken as a percentage point shift in the average number of applicants who took up the offer for every unit of the independent variable, sex. As sex is also scored as a dummy variable with females coded 1 and males coded 0, we can interpret the co-efficient of 0.132 as showing that females were 13.2 percentage points more likely than males to down down the offer.

A further illustration is provided by comparing the statistics in Table 2:2. The regression weight of —0.116 is again equivalent to the percentage point difference between the two categories of the independent variable, home location, in the rate of

TABLE 2:2

THE GROSS EFFECT OF HOME LOCATION SHOWN BY TWO METHODS OF STATISTICAL ANALYSIS

(a) Crosstabulation

Decision	**Home Location**		
	Rural %	Metropolitan %	All %
Take up offer	61.5	73.1	69.3
Turn down offer	38.5	26.9	30.7
Total	100.0	100.0	100.0
Weighted N	(324)	(683)	
Percentage point difference 26.9 − 38.5 = −11.6			

(b) Regression Analysis

Predetermined Variable	**Dependent Variable** Two-way decision (Turn down = 1 vs Take up = 0)
Home Location (Metropolitan = 1 vs Rural = 0)	−.116

turning down the offer. From the table we conclude that metropolitan students were 11.6 percentage points less likely to turn down their offers from the VUAC than were rural students.

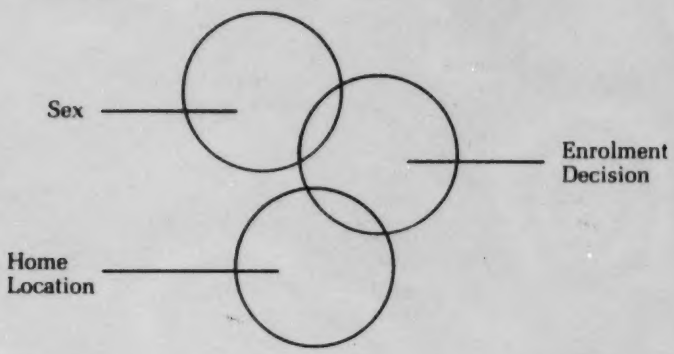
Before concluding this discussion it is important to note that the gross effect of a variable may not be unique to that variable. That is, for example, a proportion of the gross effect of sex on enrolment decision may be shared in common with a variable with which it is related (say the applicants' home location). In fact this will almost always be the case in a complex situation such as the one we are investigating. This is illustrated by the diagrams in Figure 2:1. The relationships imply that we must consider the net effect of an independent variable as well as its gross effect.

Net Effects

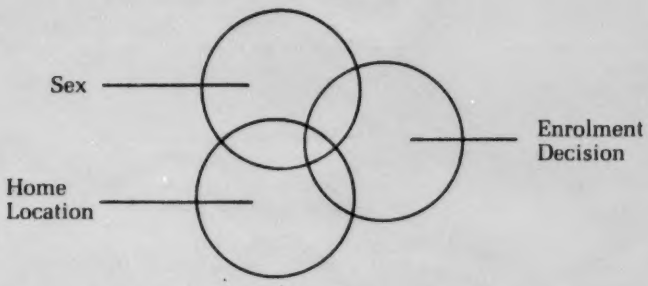
The net effect of a variable is that part of its gross effect which cannot also be explained by any other variable or group of variables in the causal model. That is, net effects are unique to a particular variable within a defined theoretical context. In Figure 2:1(B) the net effect of sex is that part of its gross effect that does not overlap with the effect of home location. This implies that the causal effects of predetermined variables may be considered as being composed of two parts: that part which is unique to the particular variable, called the net effect, and that part which is shared with one or more of the other predetermined variables, called the joint effect(s).

We have seen already that sex has a moderately strong gross effect on the applicants enrolment decisions. In our interpretation of the relationship, however, we must recog-

A. Two Independent Variables with Unique Gross Effects



B. Two Independent Variables with Non-Unique Gross Effects



C. The Net and Joint Effects of Sex and Home Location

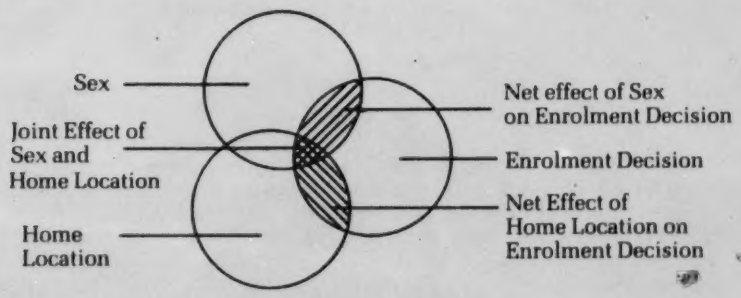

Sex
Joint Effect of Sex and Home Location
Home Location
Net effect of Sex on Enrolment Decision
Enrolment Decision
Net Effect of Home Location on Enrolment Decision

FIGURE 2:1
ILLUSTRATION OF THE GROSS AND NET EFFECTS OF SEX AND HOME LOCATION ON ENROLMENT DECISION

TABLE 2:3

CROSSTABULATION OF SEX BY TWO-WAY DECISION, CONTROLLING FOR HOME LOCATION

(a) Rural Home Locations only

Decision	Sex		
	Male %	Female %	All %
Take up offer	67.3	58.1	61.5
Turn down offer	32.7	41.9	38.5
Total	100.0	100.0	100.0
Weighted N	(121)	(204)	
Percentage point difference 41.9 − 32.7 = 9.2			

(b) Metropolitan Home Locations only

Decision	Sex		
	Male %	Female %	All %
Take up offer	80.3	66.7	73.1
Turn down offer	19.7	33.3	26.9
Total	100.0	100.0	100.0
Weighted N	(319)	(364)	
Percentage point difference 33.3 − 19.7 = 13.6			

nize that the applicants' sex may be associated with other predetermined variables. A cross-tabulation of sex and home location shows that 36.0% of female and 27.4% of male applicants who received an offer of a tertiary place came from rural areas. (Again, these estimates are from our survey data.) Could it be then that the gross effect we observed for sex is partly or wholly attributable to the fact that female applicants who received an offer of a tertiary place were more likely than males to live in the country? If, for example, we found that the gross effect of sex was completely associated with the greater rurality of females in our population we would be unable to claim that sex **per se** was a determinant of enrolment decisions. On the other hand, the effect of sex might be only partially reduced when the applicants' home location is introduced into the model. In this case the unique effects of sex would remain but be reduced in magnitude.

We can test how much the effect of sex is due to different sex distributions in urban and rural areas by tabulating sex against enrolment decision, first for rural students and then for those with metropolitan home addresses. The results in Table 2:3 suggest that, although the difference between the sexes in the rate of turning down offers is less in rural areas than in the metropolis, the sex difference is only slightly reduced by controlling for home location in this way. The percentage point difference between the sexes is 9.2 for rural applicants and 13.6 for those living in the metropolis.

Our regression procedures enable an estimate to be made of the resulting net effect. This is shown in Table 2:4. The net effect of sex, over home location, is 0.123 which is only a little less than the gross effect. That is, by assuming that **other things were equal** (in this case home location) we would still infer that the applicants' sex, in itself, is a cause of some difference in enrolment decisions.

TABLE 2:4

REGRESSION ANALYSIS OF TWO-WAY DECISION ON SEX AND HOME LOCATION

Predetermined Variables	Dependent Variable Two-way decision (Turn down = 1 vs Take up = 0)
Sex (Female = 1 vs Male = 0)	.123
Home Location (Metropolitan = 1 vs Rural = 1)	−.104

The net effect of sex can be interpreted as follows: After controlling for the fact that sex and home location are associated, females are, on average, 12.3 percentage points more likely than males to turn down the offer through the VUAC of a place in a college or university. Table 2:4 also shows the net effect of home location. This effect can be interpreted similarly as follows: after controlling for the effect of sex, applicants from metropolitan areas are 10.4 percentage points less likely to reject their offers than are applicants from rural areas. Note that the sign of the co-efficient refers to whether the group coded 1 on the independent variable (e.g. sex) is more (+) or less (—) inclined to reveal the attribute coded 1 on the dependent variable (i.e. to turn down the offer of a place by deferring or declining it).

Intervening Variables

So far we have been dealing with a very simple model to explain the decision on the VUAC offer consisting of two predetermined variables and the dependent variable. As well as variables such as sex and home location, our model contains intervening variables (or endogenous variables) which we hypothesise will be affected by the predetermined variables and in turn have a causal effect on the decision. For example, we argued that aspects of the applicants' achievement in the final year of secondary school, such as HSC course type and HSC score, would intervene between our predetermined variables and the enrolment decision.

The notion of an intervening variable is that it will carry or mediate some of the effect of a predetermined variable on the outcome (as well, perhaps, as having its own independent effect). Some of the influence of the applicants' sex, for example, may be due to the fact that female students are more likely to take particular combinations of HSC subjects, and that HSC course type may have an effect on the decision taken on the VUAC offer. Thus HSC course type may, in part, determine the decision taken and may itself be partly determined by the predetermined variables such as sex and home location. In the following discussion we will examine the mediating effect of HSC course type divided simply into science and non-science courses.

Total Effects, Direct Effects and Indirect Effects

When a causal model is made more complex by the introduction of intervening variables the concept of net effect becomes ambiguous. Is the effect we are discussing net

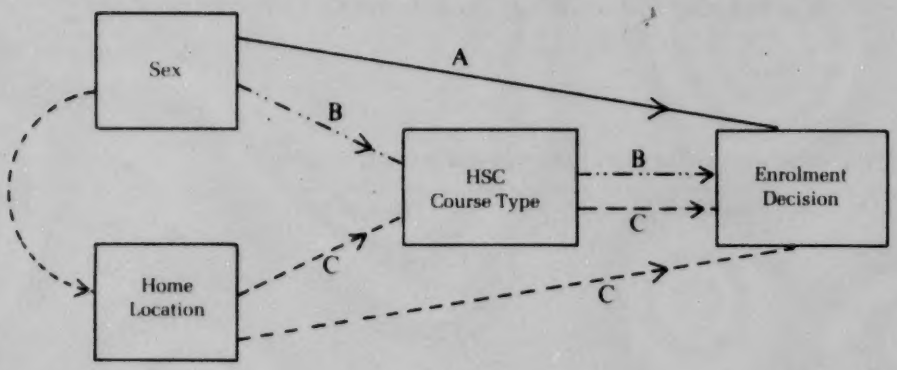


FIGURE 2:2
GROSS, TOTAL, INDIRECT AND DIRECT EFFECTS OF THE APPLICANTS' SEX ON ENROLMENT DECISION

of **all** other variables in the model or is it net of only those variables which occur prior to it or are co-incident with it in the model? Does it suit our research purpose, for example, to discuss the effect of sex net of home location **and** the type of HSC course studied? Or would our analysis be more useful if **firstly** we examined the effect of sex net of home location and **secondly** if we partitioned this net effect into a portion mediated by HSC course type and a portion net again of HSC course type? The concepts of total effect, indirect effect and direct effect defined by Duncan (1966, 1971) and elaborated into a methodology by Alwin and Hauser (1975) enable this to be done.

The total effect of a variable may be defined as that portion of its gross effect on the dependent variable which is net of all variables prior to or co-incident with it in the causal sequence. Thus if we elaborate the simple model we have been discussing to include HSC course type as a mediating variable (coded science = 1, non-science = 0) along with sex and home location as predetermined variables, the total effect of sex on the enrolment decision is its effect net of home location (which is co-incident with sex in the model) **ignoring** the presence of HSC course type.

The total effect of sex can be considered as the sum of its **direct** effect net of both home location and HSC course type and its **indirect** effect net of home location but mediated by HSC course type. The direct effect of a variable is thus its effect net of all other variables in the model. The indirect effect is that portion of its total effect mediated by the intervening variable(s) in the model.

These distinctions are illustrated in Figure 2:2. The gross effect of sex on the enrolment decision is made up of all the paths shown in the figure. The total effect of sex on the enrolment decision is defined by those paths labelled A and B but excluding the paths labelled C. The total effect can be partitioned further into a direct effect (path A) and an indirect effect through the mediating variable (path B). A numerical example will help to make this clear.

TABLE 2:5

THREE PRESENTATIONS OF THE REGRESSION ON TWO-WAY DECISION

(a) Showing direct effects on course type and two-way decision

Independent Variables	**Dependent Variables**	
	A HSC Course Type	**B** Two-Way Decision
Sex (Female = 1 vs Male = 0)	−.251	+.087
Home Location (Metropolitan = 1 vs Rural = 0)	−.024	−.107
HSC Course Type (Science = 1 vs Non-science = 0)		−.143

(b) Showing, additionally, the total effects of sex and home location on two-way decision

Independent Variables	**Dependent Variables**		
	A HSC Course Type	**B1** Two-Way Decision (Total Effects)	**B2** Two-Way Decision (Direct Effects)
Sex (Female = 1 vs Male = 0)	−.251	+.123	+.087
Home Location (Metropolitan = 1 vs Rural = 0)	−0.24	−.104	−.107
HSC Course Type (Science = 1 vs Non-science = 0)			−.143

(c) Showing total, indirect and direct effects on two-way decision

Independent Variables	Total Effect on Two-Way Decision	Indirect Effect via HSC Course Type	Direct Effect
Sex (Female = 1 vs Male = 0)	+.123	+.036	+.087
Home Location (Metropolitan = 1 vs Rural = 0)	−.104	+.003	−.107
HSC Course Type (Science = 1 vs Non-science = 0)			−.143

The type of course taken at HSC appears to be strongly related to enrolment decisions. Taking the gross effect of course type on the two-way decision, for instance, we find that whereas 78.2% of science students took up their offers, the equivalent figure for non-science students was 61.8%. Further, sex and course type are strongly related. Among females, 31.6% were science students whereas 56.4% of males took science.

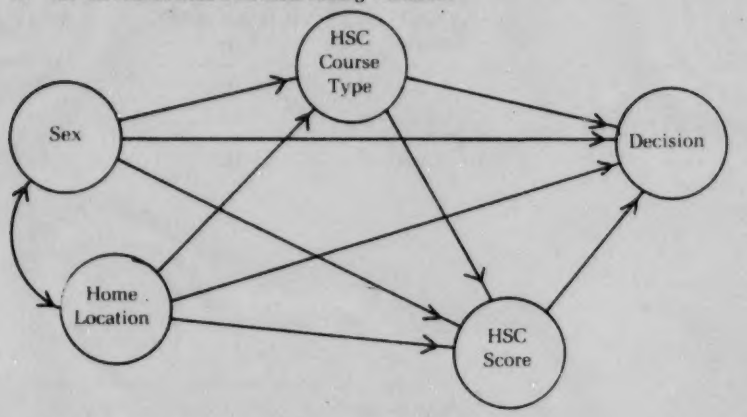
Using the same logic as we used for estimating simple net effects previously we might suggest that part of the reason for females being less likely to accept their VUAC offer lies in the fact that they were less likely to take a science course at HSC. Thus the total effect of sex (its effect net of home location) is to be analyzed further into two parts. The first is that part of the effect of sex on the enrolment decision that is due to the fact that fewer females took a science course at HSC. This is the indirect effect of sex mediated by HSC course type. The second is the effect of sex net of HSC course type; its direct effect.

There are a number of ways in which the direct, indirect and total effects of variables can be presented. In interpreting these presentations it is important to keep in mind that the total effect of a variable is the sum of its direct and indirect effects. So given two of the three effects the third can be calculated readily.

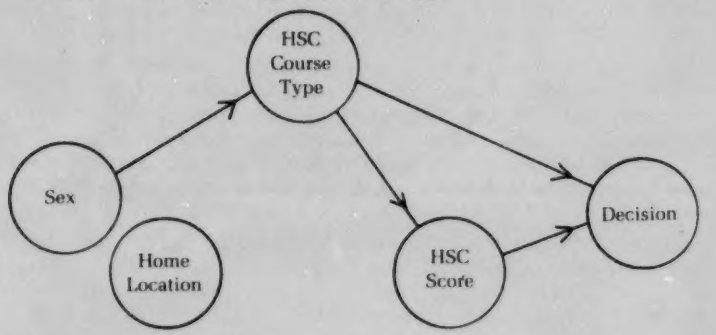
Table 2:5, part (a) shows the conventional method of presenting data for a causal path analysis (using here, the unstandardised co-efficients). Column A contains the co-efficients for the regression of HSC course type on the two predetermined variables. From this column we can see that female applicants were, other things (i.e. home location) being equal, 25.1 percentage points less likely than males to have taken a science course at HSC. Similarly, after controlling for sex, applicants from metropolitan homes were slightly less likely than those from rural homes to have taken science.

Column B shows the co-efficients for predicting enrolment decision from the predetermined variables and from HSC course type. They show that, other things **in this model** being equal, females were 8.7 percentage points more likely than males to turn down their offers; that those living in rural areas were 10.7 percentage points more likely than those living in metropolitan Melbourne to turn down their offers (we can reverse the sign of the co-efficient so long as we intuitively reverse the coding of one or other of our variables); and that those who had taken a science course at HSC were 14.3 percentage points less likely to turn down their offers. These co-efficients are the direct effects of the three variables on the enrolment decision. We can note here that the direct effect of sex is somewhat reduced from that shown in the two predictor model of Table 2:4, but that the direct effect of home location is very slightly larger.

A. A Path Model with Two Intervening Variables



B. The Indirect Effect of Sex Through HSC Course Type



C. The Indirect Effect of Sex Through HSC Score

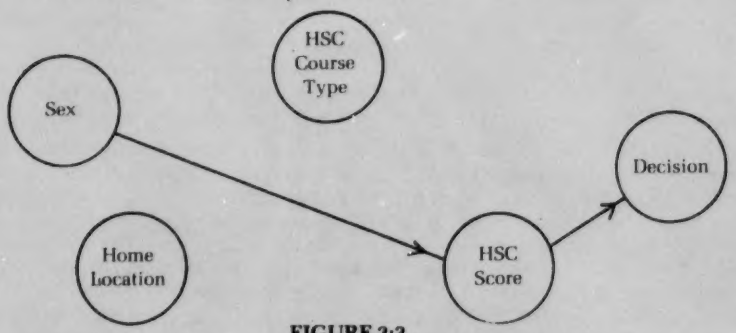


FIGURE 2:3
DIRECT AND INDIRECT EFFECTS IN A PATH MODEL WITH TWO INTERVENING VARIABLES

In Table 2:5 (b) we incorporate the data from the earlier two predictor model as column B1. In the context of the three predictor model with course type as an intervening variable these co-efficients now define the total effects of sex and home location. (It may help to refer back to Figure 2:2 here.) Columns B1 and B2 thus enable us to compare the total effects of sex and home location with the direct effects of these two variables. Remembering that **total effect = direct effect + indirect effect** it is simple to subtract the direct effect (column B2) from the total effect (column B1) to get an estimate of the indirect effect. Table 2:5 (b), though it omits this listing of the indirect effects, does provide information about the causal paths earlier in the model between the predetermined variables and the intervening variable (HSC course type). This information sometimes can be useful in interpreting the indirect effects.

Table 2:5 (c) shows the final method of presenting these results. The first and last columns of this table are simply transcribed from Table 2:5 (b). They show the total and direct effects of sex and home location on enrolment decision and the direct effect of course type. The second column in Table 2:5 (c) shows indirect effects which are calculated by subtracting the direct from the total effects; that is by subtracting the co-efficients in column B2 from those in column B1 in Table 2:5 (b).

The total effect of sex on enrolment decision is 0.123. This may be interpreted as females being 12.3 percentage points more likely than males to reject places offered when the somewhat greater proportion of females who came from the country is controlled. The indirect effect of sex, however, is 0.036. That is, 3.6 percentage points or a little over one quarter of the total effect of sex is mediated by HSC course type. That is to say about a quarter of the total effect of sex may be attributed to the fact that females were less likely to take science courses in HSC (Table 2:5 (b)) and those who took science courses were more likely to take up offers of places in tertiary education. The direct effect of sex is shown in the final column of Table 2:5 (c). It shows that (in the context of the three predictor model) about three quarters of the total effect of sex bears directly on the enrolment decision.

It can happen that the direction of direct and indirect effects differ. For instance, the total effect of home location shows that metropolitan students were 10.4 percentage points less likely than rural students to turn down their VUAC offers, after controlling for sex. The indirect effect mediated through HSC course type is, however, positive. The total effect is thus the sum of two contrary tendencies; in as much as metropolitan students were slightly less likely to take science at HSC (Table 2:5 (a)) they were more likely to turn down their VUAC offers, but if we exclude the consideration of their HSC course, metropolitan students were less likely to turn down their offer. The resulting total effect of home location is the sum of a small positive indirect effect and a larger negative direct effect.

A Final Example

We turn, finally, to an examination of a more elaborate model, similar in nearly all respects to those discussed in the later chapters of this monograph. For the sake of simplicity, however, only two predetermined variables are included. Our elaboration is to add an additional intervening variable, HSC aggregate score, and assume that it follows HSC course type in the causal sequence. This model is illustrated in Figure 2:3 (a). The total effect of a predetermined variable in this model (sex or home location) can be partitioned as: **total effect = direct effect + indirect effect via HSC course type + indirect effect via HSC score.**

The indirect effect of sex through HSC course type is illustrated in Figure 2:3 (b). It should be noted that the indirect effect via course type includes the path from course type to decision as well as the path from course type through HSC score to decision. Thus the indirect effect of a mediating variable in a path model includes those portions of its effect that are further mediated by subsequent variables in the model.

TABLE 2:6

COEFFICIENTS FROM THE REGRESSION OF HSC COURSE TYPE, HSC SCORE AND TWO-WAY DECISION ON SEX AND HOME LOCATION (Sample Data)

Independent Variables	Dependent Variables		
	HSC Course Type	HSC Score	Two-Way Decision
Sex (Female = 1 vs Male = 0)	−.251	+0.4	+.088
Home Location (Metropolitan = 1 vs Rural = 0)	−.024	+8.1	−.090
HSC Course Type (Science = 1 vs Non-Science = 0)		+18.3	−.103
HSC Score			−.002

Note: Two-way decision is coded Decline and Defer = 1; Accept Full- and Part-time = 0

TABLE 2:7

TOTAL, DIRECT AND INDIRECT EFFECTS OF SEX, HOME LOCATION, HSC COURSE TYPE AND HSC SCORE ON TWO-WAY DECISION (Sample Data)

Independent Variables	Effects on Two-Way Decision			
	Total Effect	Indirect Effect via HSC Course Type	Indirect Effect via HSC Score net of HSC Course Type	Direct Effect
Sex (Female = 1 vs Male = 0)	+.123	+.036	−.001	+.088
Home Location (Metropolitan = 1 vs Rural = 0)	−.104	+.003	−.018	−.090
HSC Course Type (Science = 1 vs Non-Science = 0)	−.143	−	−.040	−.103
HSC Score	−.002			−.002

Note: Two way decision is coded Decline and Defer = 1; Accept Full- and Part-time = 0

The indirect effect of sex on the enrolment decision mediated by HSC score is illustrated in Figure 2:3 (c). This indirect effect excludes that part of the effect of HSC score attributable to HSC course type.

The data for an analysis of the total, direct and indirect effects of sex and home location are presented in Tables 2:6 and 2:7. Table 2:6 contains co-efficients for the regression of HSC course type, HSC score and two-way decision on these two predetermined variables. These are the co-efficients conventionally presented in a path analysis and the form of this table is equivalent to Table 2:5 (a). The co-efficients represent the effects of sex and home location on HSC course type (the first column) sex, home location and course type on HSC score (the second column) and sex, home location, course type and score on the two-way decision.

The total, indirect and direct effects on the two-way decision are shown in Table 2:7. From these co-efficients we can partition the total effect of each predictor. Thus of the total effect of sex (0.123); 71.5% (0.088/0.123 x 100) is direct to the two-way decision; −0.5% (−0.001/0.123 x 100) is indirect through HSC score and 29.3% (0.036/0.123 x 100) is indirect through HSC course type and HSC score. Similarly, of the total effect of home location 86.5% is direct, 17.3% is indirect through HSC score and −2.8% is indirect through HSC course type and HSC score.

Additionally, HSC course type has a strong total effect on the two-way decision; applicants who took an HSC science course being 14.3 percentage points more likely to take up rather than turn down the offer. This total effect is, as explained earlier, net of the other predetermined variables. Of this effect 72.0% is direct to two-way decision and 28.0% is indirect through HSC score.

In the following chapters we present data in tables similar to 2:6 and 2:7 and interpret total, indirect and direct effects (generally for two way decision only) in the manner described above.

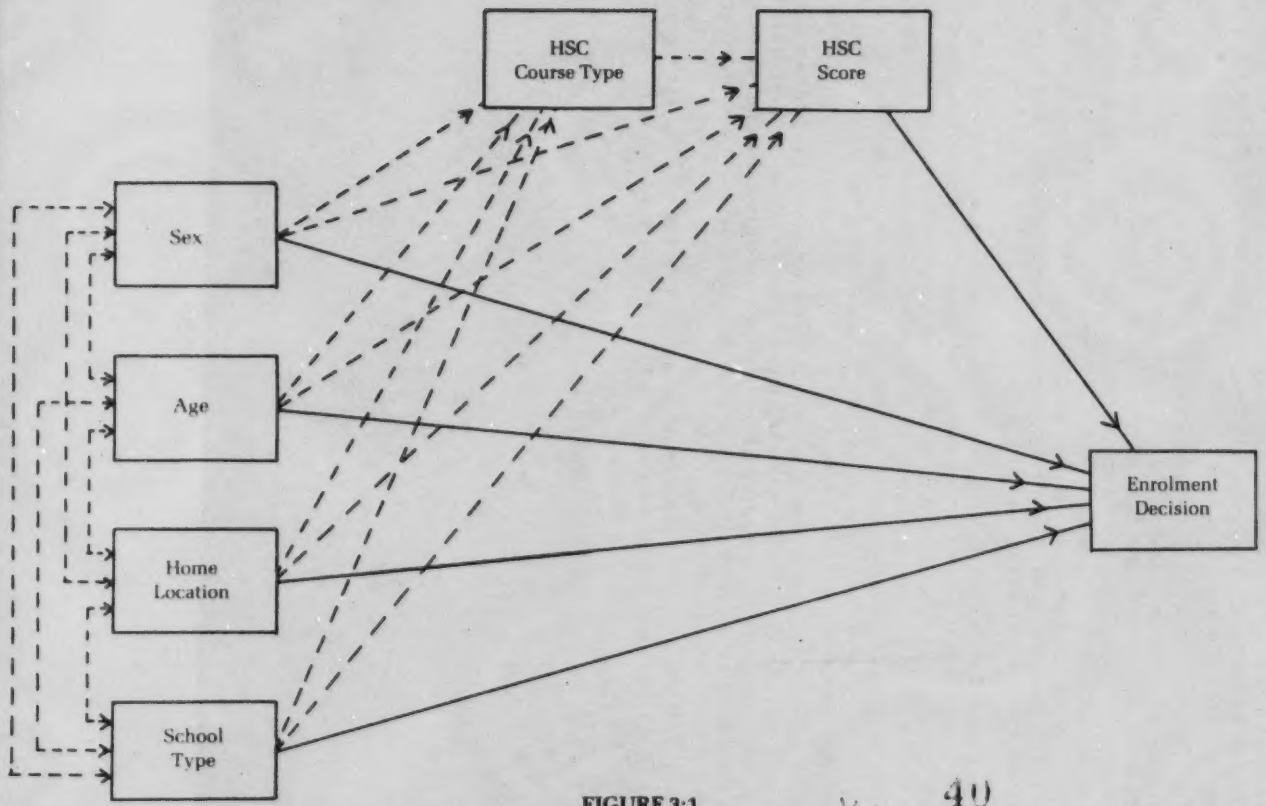


FIGURE 3:1
A BASIC MODEL OF TRANSITION TO HIGHER EDUCATION IN VICTORIA

CHAPTER 3

A BASIC MODEL OF TRANSITION

We commence our study of transition to higher education in Victoria by specifying a simple causal model which can be tested using the data from the VUAC records and employing the procedures outlined in Chapter 2. The path diagram in Figure 3:1 portrays the model and specifies the assumptions and hypotheses which guided the analyses. We hypothesise four predetermined variables which are the applicant's sex, age, home location and the type of secondary school last attended. The double-headed arrows linking these variables in Figure 3:1 indicate that we do not make any causal assumptions about their interrelationships for this anlaysis. Additionally, we hypothesise two mediating variables which are Year-12 course and Year-12 aggregate results. These two variables were combined in a single block in the model we developed in Chapter 1. For the present analysis we have separated them and assumed a causal sequence from the predetermined variables to Year-12 course, from Year-12 course to Year-12 results, and from Year-12 results to the enrolment decision. Data on the pass rates of various HSC subjects (Victorian Institute of Secondary Education, 1980) show many clear differences between science and non-science subjects. These data suggest that those who took science courses would be very likely to have a higher average HSC aggregate score than groups who took other subject combinations. While our assumption of a causal relationship between Year-12 course type and Year-12 aggregate score is possibly not entirely warranted, we have used a causal ordering of these variables to explore the relationship between course type and results, to calculate their independent direct effects on enrolment decisions, and to give an account of the mediating effects particular to each of them.

In Chapter 1 we described how we identified a population of 16,173 applicants through the VUAC for tertiary places in 1980. All were Victorians and all were offered a place to study for the first time in a college or university on the basis of a completed 12th year of schooling. The analyses we describe in Chapters 3, 4, 5 and 6 are based on data from a subset of 14,042 of these applicants who applied for a place in tertiary education on the basis of a completed HSC or internally assessed high school 12th year. We excluded TOP[1] students from these analyses because we anticipated that Year-12 results would be a crucial variable in a model of transition. HSC results are qualitatively distinct from TOP results and provide a more reliable aggregate measure of Year-12 achievement as they are standardised across all candidates and adjusted to accommodate differences in the relative difficulty of the various subjects. An aggregate score of each applicant's four best subjects thus provides a comparable measure of attainment across all applicants and all combinations of subjects. We included the very small number of applicants with school-based qualifications in these analyses. They were treated as having missing data on the Year-12 achievement variables.

Of the sub-set of 14,042 applicants, 66.4% accepted their offer of a college or university place and enrolled full-time, 2.2% accepted and enrolled part-time, 18.4% declined their offer and 13.0% deferred their enrolment. Thus, on our 'two way decision' outcome variable, 68.6% had 'taken up', and 31.4% had 'turned down' the offer. Further, 46.3% of the applicants were male; and almost 50% were aged 17 or younger at December 31, 1979, 44.7% were aged 18, and 9.4% were aged 19 to 24. Also, 71.3% had home addresses in the Melbourne metropolitan area. This estimate excludes a few, as missing data, who gave addresses with central business district post codes because many of these appeared to be **poste restante** addresses. Forty-nine per-cent of applicants attended a government high school for their final year of schooling, 25.1% attended a Catholic independent school, 23.6% attended a non-Catholic independent school and 2.3% attended a state technical school, a private coaching college or had studied HSC through evening classes, a learning cooperative or the like. Almost 41% studied a science course at

TABLE 3:1

THE GROSS EFFECT OF THE APPLICANT'S SEX ON ENROLMENT DECISION

Decision	Sex		
	Male %	Female %	All %
Enrol full-time	70.7	62.6	66.4
Enrol part-time	2.6	1.8	2.2
Decline	15.9	20.6	18.4
Defer	10.7	15.0	13.0
Take up offer	73.4	64.4	68.5
Turn down offer	26.6	35.6	31.5
N	6508	7534	14042

HSC[2] (with a small number of applicants who did not study four subjects at their final attempt at HSC and those with school-based qualifications being treated as missing). Finally, the distribution of aggregate marks on the four best HSC subjects of the selected applicants was: 199 or fewer, 1.2%; 200 to 239, 28.4%; 240 to 279, 41.7%; 280 to 319, 21.1% and 320 and above, 7.7%. These groupings of marks are equivalent to the E, D, C, B, and A grades respectively.

Gross Effects in the Basic Model

In order to present the gross effects on enrolment decisions, which our later analyses in this chapter will seek to refine and explain, we crosstabulated each predictor variable with the four category decision outcome. The results of this analysis, presented simply as percentages of each category of the predictor variables, are shown in Tables 3:1 to 3:6. We will describe these data briefly, simply to give an overall view of the gross predictors of the applicants' enrolment decisions, and reserve any discussion until later in the chapter.

Table 3:1 shows that 9.0% more males than females took up, rather than turned down, their offers from the VUAC in 1979–1980.[3] Males were more likely to enrol both full-time and part-time compared with females who were, conversely, more likely both to decline and defer their offer.

TABLE 3:2

THE GROSS EFFECT OF THE APPLICANT'S AGE ON ENROLMENT DECISION

Decision	Age			
	17 and younger %	18 %	19 to 24 %	All %
Enrol full-time	67.1	65.9	64.9	66.4
Enrol part-time	1.4	1.8	7.3	2.2
Decline	17.7	19.3	17.9	18.4
Defer	13.8	12.9	9.9	13.0
Take up offer	68.5	67.8	72.2	68.5
Turn down offer	31.5	32.2	27.8	31.5
N	6441	6273	1328	14042

TABLE 3:3
THE GROSS EFFECT OF THE APPLICANT'S HOME LOCATION ON ENROLMENT DECISION

Decision	Home Location		
	Metropolitan	Country (including metropolitan outskirts)	All
	%	%	%
Enrol full-time	69.6	58.2	66.4
Enrol part-time	2.4	1.6	2.2
Decline	16.0	24.3	18.4
Defer	12.0	15.9	13.1
Take up offer	72.0	59.8	68.6
Turn down offer	28.0	40.2	31.5
N	10040	3941	13981

Applicants aged 19 or over were a little more likely to take up their offers than others (Table 3:2). They were considerably more likely to enrol part-time than others and were somewhat less likely to defer.

Relationships between home location and enrolment decisions are strong and consistent (Table 3:3). Applicants with metropolitan home addresses were 12.2 percentage points more likely to take up a VUAC offer than applications with rural home addresses. Metropolitan students were less likely to both decline and defer and, conversely, more likely to enrol both full-time and part-time.

Relationships with the type of school last attended are a little more complex (Table 3:4). Applicants who attended a non-Catholic independent school were the most likely to take up the VUAC offer; those from Catholic independent schools the least likely. This gross difference is due largely to the greater numbers of applicants from non-Catholic independent schools who enrolled full-time and the smaller numbers who declined. Those from 'other' schools were the most likely to enrol part-time, but there were no other clear differences in the rates of accepting part-time or deferring.

TABLE 3:4
THE GROSS EFFECT OF THE APPLICANT'S TYPE OF SCHOOL ON ENROLMENT DECISION

Decision	School Type				
	State High	Independent Catholic	Independent non-Catholic	Other	All
	%	%	%	%	%
Enrol full-time	65.5	62.6	73.0	62.5	66.5
Enrol part-time	2.0	1.9	1.3	8.2	2.0
Decline	19.4	22.1	12.7	17.4	18.4
Defer	13.1	13.4	13.0	12.0	13.1
Take up offer	67.5	64.5	74.3	70.7	68.5
Turn down offer	32.5	35.5	25.7	29.4	31.5
N	6756	3464	3251	317	13788

TABLE 3:5
THE GROSS EFFECT OF THE APPLICANT'S HSC COURSE TYPE ON ENROLMENT DECISION

Decision	Course Type		
	Non-Science %	Science %	All %
Enrol full-time	60.5	74.9	66.4
Enrol part-time	2.8	0.8	2.0
Decline	22.1	13.4	18.5
Defer	14.6	10.9	13.1
Take up offer	63.3	75.7	68.4
Turn down offer	36.7	24.3	31.6
N	8163	5650	13813

Tables 3:5 and 3:6 show the gross effects of HSC course and HSC aggregate score on enrolment decisions. Science students were 12.4 percentage points more likely to take up a college or university place than those who studied other combinations of subjects at HSC. Specifically, they were more likely to enrol full-time but less likely to enrol part-time, and were less likely both to decline or defer their offers. Also, those with higher aggregate HSC scores were more likely to take up their offers. This relationship is almost linear; except that whereas those who scored less than 200 and were offered places were the most likely to decline, they were the least likely to defer their enrolment. (This may well be related to the administration of 'special entry' enrolments and deferral in particular institutions.)

Direct Effects in the Basic Model

We now turn to an analysis of these effects using the multivariate procedures described in Chapter 2. Table 3:7 shows the data for an analysis of the direct effects in our basic model. The figures in the table are metric (unstandardised) regression co-efficients and (in brackets) standardised regression co-efficients for seven equations in which:

TABLE 3:6
THE GROSS EFFECT OF THE APPLICANT'S HSC SCORE ON ENROLMENT DECISION

Decision	HSC Score					
	Less than 200 %	200 thru 239 %	240 thru 279 %	280 thru 319 %	320 and above %	All %
Enrol full-time	61.1	57.9	64.7	75.1	84.1	66.4
Enrol part-time	1.2	1.8	1.9	2.3	2.4	2.0
Decline	31.1	26.4	19.4	10.6	4.4	18.5
Defer	6.6	13.9	14.0	12.0	9.2	13.1
Take up offer	62.3	59.7	66.6	77.4	86.5	68.4
Turn down offer	37.7	40.3	33.4	22.6	13.6	31.6
N	167	3916	5762	2907	1057	13809

(i) the applicant's sex, age, home location and type of school are related to the kind of HSC course undertaken;
(ii) all these variables are related to the applicant's HSC score;
(iii) and all these variables in turn are related to five contrasts among the enrolment decisions the applicants made.

The five contrasts among the enrolment decisions are turn down (coded 1) against take up (coded 0); decline (coded 1) against accept full-time (coded 0); defer (coded 1) against accept full-time (coded 0); accept part-time (coded 1) against accept full-time (coded 0); and defer (coded 1) against decline (coded 0).

All calculations are based on correlations between variables calculated by maximising the available information by 'pairwise' deletion of missing data. The minimum number of subjects contributing to a particular equation is shown at the heading of each column. We also table the multiple correlation co-efficient (R) which shows the correlation between each dependent variable and the linear regression function. The apparent ability of all our models to explain the variability in enrolment decisions in low. With data such as these, however, we believe that the magnitude of the effect as expressed in the metric regression co-efficients is a much more valuable statistic for interpretation.[4]

Further, as these particular data represent a complete population of students and are not a sample in any sense, it is not appropriate to interpret inferential statistics derived from sampling theory. Hence we have focussed our attention only on the descriptive measures of relationships between the predetermined and intervening variables of our model and the criteria.

The Student's HSC Course

In the first column (A) of Table 3:7 we see the net relationships between the predetermined variables of the model and whether or not the applicant's HSC course included at least three science subjects. The co-efficients show that, other things being equal, females and older students were less likely to have taken an HSC science course. Further, the relationships between the school contrasts and science show that applicants in Catholic independent schools were **less** likely than state high school applicants to have taken a science course, whereas those from non-Catholic independent schools and 'other' schools were **more** likely than those from state high schools to have taken science. The relationship between our general home location variable and HSC course type is negligible.

A brief reiteration of our interpretation of these regression co-efficients may be helpful here. As all the dichotomous variables in the regression equations were coded 0 and 1, the marginal proportions of these variables can be interpreted as probabilities of occurrence in one or other category of the dichotomy, and the metric regression co-efficients as probabilities conditional on the distributions of other variables in the model. Thus, for example, the co-efficient of −0.24 relating the applicant's sex (coded 1 for female and 0 for male) to HSC course type (coded 1 for science and 0 for other course) indicates that, other things being equal, the probability of finding in our data a male applicant taking a science course is 0.24 points greater than that of finding a female applicant taking a science course. An alternative interpretation is that, if other conditions represented by the variables in the equation had been equal, 24 percentage points more male than female applicants would have taken an HSC science course.

The other metric co-efficients in the first column of Table 3:7 can be interpreted in a manner similar to the interpretation for sex given above. The co-efficient for age indicates that there was a 4.4% decrease in the likelihood of an applicant taking science for every year older he or she was. Those for school type show that students in Catholic independent schools were about 2% less likely to have taken a science course than were those in a

TABLE 3:7
MODEL 1: SEX, AGE, HOME LOCATION, AND SCHOOL EFFECTS ON HSC COURSE TYPE, HSC COMPOSITE SCORE AND ENROLMENT DECISION

Independent Variables	Dependent Variables						
	A HSC course type	B HSC score	C Turn down vs take up[a]	D Decline vs accept full-time	E Defer vs accept full-time	F Accept part-time vs full-time	G Defer vs decline
	N = 13699 R = 0.26	N = 13696 R = 0.26	N = 13696 R = 0.24	N = 11651 R = 0.27	N = 10916 R = 0.15	N = 9368 R = 0.22	N = 4336 R = 0.22
Sex (1 = female, 0 = male)	−0.240 (−0.24)[b]	−1.33 (−0.02)	0.053 (0.06)	0.023 (0.03)	0.047 (0.06)	−0.014 (−0.04)	0.024 (0.02)
Age	−0.044 (−0.08)	−2.82 (−0.07)	−0.015 (−0.03)	0.010 (0.02)	−0.004 (−0.01)	0.032 (0.17)	−0.007 (−0.01)
Home location (1 = metropolitan, 0 = non-metropolitan)	−0.003 (−0.00)	5.33 (0.07)	−0.104 (−0.10)	−0.099 (−0.10)	−0.068 (−0.08)	−0.001 (−0.00)	0.017 (0.02)
School type (vs State High School)	(0.04)	(0.17)	(0.05)	(0.08)	(0.05)	(0.05)	(0.06)
Catholic Independent	−0.023 (−0.02)	5.23 (0.06)	0.046 (0.04)	0.040 (0.04)	0.018 (0.02)	0.002 (0.01)	−0.032 (−0.03)
non-Catholic Independent	0.027 (0.02)	15.62 (0.18)	−0.016 (−0.01)	−0.036 (−0.04)	0.006 (0.01)	−0.007 (−0.02)	0.068 (0.05)
Other	0.041 (0.01)	3.18 (0.01)	0.013 (0.00)	0.139 (0.05)	0.113 (0.05)	0.055 (0.05)	0.151 (0.05)
HSC course type (1 = Science, 0 = other)		10.14 (0.14)	−0.088 (−0.09)	−0.085 (−0.10)	−0.052 (−0.07)	−0.038 (−0.10)	0.038 (0.04)
HSC score			−0.0019 (−0.15)	−0.0020 (−0.17)	−0.0005 (−0.04)	0.0002 (0.03)	0.0028 (0.18)

Note: a. Where the dependent variable consists of a simple binary contrast, the first-mentioned value (e.g. 'Turn down') is coded '1' and the second mentioned (e.g. 'Take up') is coded '0'.

b. Effects are presented in the form of unstandardised and (in brackets) standardised co-efficients. The standardised co-efficients provide information on the relative importance of effects **within** a particular equation. That shown for school type is Heise's (1972) "Sheaf" co-efficient. It summarizes the effect of the complete group of between-school contrasts.

state high school, whereas those in non-Catholic independent schools were about 3% more likely to have taken science.

While the relationship for 'other' schools appears stronger, we are reluctant to give it much weight in our interpretation of these data. The group of students attending 'other' schools was small (only 2.3% of those for whom data were available). Also, the schools were heterogenous in character, ranging from technical schools which presented students for HSC, through high school and technical school evening classes, to coaching colleges and community based learning cooperatives. It is quite likely that the apparent bias towards science for this group is due to a concentration of science students in one of these sub-groups whose contribution to the pool of VUAC applicants may be very inconsistent from year to year.

It appears that, of the variables in our model, the major cause of taking a science course or not at HSC was the aplicant's sex; however this conclusion cannot be derived from the unstandardised regression co-efficients. Variations in the scales of measurements and the marginal distribution of dichotomous variables make it necessary to examine the set of standardised co-efficients to make these comparisons. In fact the conclusion is justified for the present equation. The standardised co-efficients (including the sheaf co-efficient for school type) show that the applicants' sex was about three times more important than age and six times more important than the type of school last attended in determining the type of HSC course undertaken.

HSC Achievement

The second column in Table 3:7 shows the relationships between the variables we have discussed above and the applicants' HSC scores. All the relationships are worthy of interpretation. Other things being equal, female applicants had a slightly lower aggregate HSC score than males, as did those who were older; for each year of age, an applicant's net HSC score was, on average, about three points lower. Other things being equal, metropolitan students scored 5 aggregate HSC points higher than rural students. The average best-four score of applicants who attended a non-Catholic independent school was a net 16 points higher than the score of those attending state high schools and the average score of those attending Catholic schools was a net 5 points higher. Those attending 'other' schools scored an average of 3 points more. Finally, students taking an HSC science course had a net advantage of 10 points of HSC aggregate score over their peers. The standardised regression co-efficients show that the strongest direct effect is that for the type of school last attended. School type is followed by HSC course type, age, home location and the applicant's sex.

It is tempting to draw strong evaluative conclusions from these findings; to point, for example, to the clear net differences between schools and home locations and to ascribe these to the differential impact of government versus non-government schools and to a rural versus metropolitan upbringing. There is, however, an important caveat to conclusions of this kind. As we discussed in Chapter 1, this preliminary model is mis-specified in at least two ways. As we are working with readily available data we have not been able to include a measure of the applicant's prior intelligence, nor any indicators of family social status. The absence of these variables does not invalidate our estimates of relationships between independent and dependent variables, other things **in the model** being equal. It does, however, suggest that we should not interpret these relationships as direct causes. Because of the mis-specifications, associations between HSC score and school type, for example, may be spuriously high, being properly attributable to a prior cause. Thus it is clearly possible that the observed differences between schools are actually mediating the effects of social status and intelligence on HSC attainment, and that the metropolitan rural distinction is mediating the effect of social status. Data gathered in the questionnaire phase of this study will help to answer this problem, at least as far as family

social status is concerned. In a later study we also intend to build contextual social status and 'rurality' information from postcode aggregates of census data in to the model. These data should sharpen the estimates of the specific direct effects of school type and geographic isolation on HSC score and enrolment decisions.

The pattern of superior performance of those in Catholic and non-Catholic independent schools is in accord, however, with the results of the first report of the ACER "*Study of School Leavers*" (Williams, Clancy, Batten and Girling-Butcher, 1980). Their estimates, derived from performance on word knowledge, literacy and numeracy tests by a national sample of 14 year-old students, were controlled for a variety of family variables including occupation and education. Here the rank ordering of schools by pupil performance, other things being equal, was also non-Catholic independent school, Catholic independent school and state high school. It is highly likely, therefore, that some of the differences in net HSC scores in our Victorian population are due to direct school system effects.

There are similar difficulties with interpretation of the home location effect. In this case some control over social status differences is probably achieved by the inclusion of school type in the model. However, we cannot be certain that all the improvement in HSC score for metropolitan students is directly attributable to metropolitan living. Williams *et al.* (1980) found little relationship between the achievement of basic skills and a scale of 'rurality' based on four occupation and domestic indices. Their index is likely to overlap quite strongly with family social status, however, and we are inclined to believe that a geographical or ecological index might have a stronger net effect on school attainment. But our present data do not give this belief unequivocal support.

The relationship between HSC course type and aggregate score is an interesting and challenging one. Ten points of HSC aggregate score represent approximately one quarter of a standard deviation difference of score for this group of students which, as a net difference, is quite large. Within the context of the methods used to standardise the Victorian HSC scores, an explanation of the difference between the aggregate scores of science and non-science students might be that science students are simply the more intelligent or academically oriented group. Therefore, it could be claimed that our finding of a relationship between HSC course type and HSC aggregate score is spurious, that it results from the mis-specification of the model through our inability to include measures of prior intelligence, specific abilities or academic interests.

Whatever the explanation is for the relationship, it appears to have important implications for the transition of some groups to higher education. Using a modification of the present model we calculated that the effect of sex on HSC score, when HSC course type was ommited from the model, was −3.76. This metric co-efficient dropped to −1.33 when HSC course type was added. That is, the direct effect of sex accounted for only 35% of its total effect on HSC score whereas the indirect effect through course type accounted for 65%. Thus, much of the explanation for why the girls in our population did less well in aggregate on the Victorian HSC examination appears to be that they were less likely to take science courses. It is difficult to argue, we believe, that this mediated sex effect is caused by the lower intelligence or academic interests of girls taking HSC, or by interactions between sex, intelligence and HSC course choice.

We will show shortly that there are quite strong net relationships between HSC course type and the likelihood of an applicant accepting an offer full-time in favour of science students. There is also an indirect association through HSC aggregate score. Thus, those who do not take HSC science courses are directly and indirectly disadvantaged in acceptance of VUAC offers of college or university places. (And possibly also in receipt of attractive offers). There does, therefore, appear to be evidence in our data for a causal chain of both direct and indirect links which runs from being female, to a lesser likelihood of taking science, to lower aggregate HSC scores, to a lower chance of accepting an offer. We do not know whether a direct test has been made of the assumption that the difference in

HSC scores between science and non-science students is due to a difference in intelligence, abilities or interests and is not inherent in the procedure of 'autostandardisation' of HSC marks in Victoria (perhaps being associated with differential reliabilities of the marks in various subjects). The unequal opportunities that accrue to those who do not take science courses appears to warrant a study of this kind.

We have alluded during this discussion to direct links between sex and age and the HSC aggregate score. The direct link with sex is not strong but, as we described above, much of the relationship between sex and HSC aggregate is mediated through the type of HSC course taken. There is also a negative relationship between age and HSC aggregate score, but this is largely direct and not mediated through course type. This relationship with age is as expected. Within the age range we are considering, and given that our HSC aggregate was calculated only if at least four subjects were taken at an applicant's last attempt at HSC, there are a variety of reasons for older students scoring less well. While our aggregate is not actually discounted for a second attempt (as the formal 'Anderson Score' is), it is likely that the majority of second attempters are generally lower achievers. Additionally, many older students will be returning to HSC after, possibly, up to five or six years break from studying.

Enrolment Decisions

Columns C, D, E, F and G of Table 3:7 present the data for five separate equations which relate the preceding predetermined and intervening variables to contrasts among the enrolment decisions made by the applicants. The metric co-efficients show increases in the probability of a decision compared with its contrasts. Thus in column C, for example, all co-efficients, with the exception of that for HSC aggregate score, show the increased or decreased probability of turning down (declining or deferring) a college or university offer as against taking it up either full-time or part-time which is associated with the dichotomous contrast represented by the independent variable. For HSC aggregate, the co-efficient shows the change in probability of turning down a college or university offer as against taking it up associated with an increase of 1 HSC aggregate point. The associated standardised co-efficients provide information on the relative importance of each effect within the one equation.

Column C shows the effects on the general contrast between taking up the offer and turning it down. All effects, with the possible exception of the age of the applicants, appear to be of substantive interest. The strongest is for the applicant's HSC score. The metric co-efficient indicates that for every 10 points increase in HSC score there was an associated decrease of almost two percentage points in the likelihood of an applicant turning down an offer of a place. Another way of interpreting the result is that, other things being equal, there was a decrease in the chance of turning down as against taking up an offer of almost 23 percentage points for a student who scored 320 marks (the minimum score resulting from 4 A grades) compared with one who scored 200 (the minimum score resulting from 4 D grades). It is important to recognise that all students in this study actually received an offer of a college or university place (although they may not necessarily have 'passed' HSC) and that this is a net relationship over sex, age, home location, school and HSC course type. As we will show later, much of this relationship appears to be explained (quite independently) by the type of institution making the offer and the preference level of the offer. That students who score less well at HSC receive an offer of a less preferred course and are thus more likely to turn down the offer is easy to understand. That those with lower HSC scores are also more likely to turn down offers from particular kinds of institutions irrespective of preference level suggests a complex interplay of aspirations and self-perceptions which warrants a more detailed investigation than we are able to give here.

Next in importance are the effects of home location and HSC course type on the

decision to turn down rather than take up the VUAC offer. The impact of these factors is about two-thirds that of HSC score. Other things being equal, students living outside the Melbourne metropolitan area were about 10 percentage points more likely to turn down an offer as against take it up, compared with those living within the metropolitan area. Similarly, compared with science students, applicants who had taken a non-science course at HSC were about 9 percentage points more likely to turn down an offer rather than take it up.

It might appear that this strong effect of HSC course type could be explained by the types of institutions and the preference levels associated with courses offered to science students. If this were the case, the inclusion of these variables in the model should result in a reduction of the effect of taking a science course on the enrolment decision. However, such is not the case. The effect of taking a science course at HSC is principally a direct one. It is not markedly reduced by the inclusion of preference level, the type of institution making the offer, and, later by the inclusion of attitudes such as the perception of career benefits. This indicates either that taking a Year-12 science course, in itself, predisposes students to accept offers of places in tertiary education or, possibly, that this group has a greater certainty about their career plans or a very general tendency to seek intellectually complex environments (Spaeth, 1976). Unfortunately, any attempt to unravel these competing explanations is beyond the scope of our exploratory study.

The impact of the remaining factors ranged between 20% and 40% of that of HSC aggregate score. Other things being equal, approximately 5 percent more females than males turned down their VUAC offers. Also, students who attended Catholic independent schools and 'other' schools were, other things being equal, more likely to turn down as against take up an offer compared with students who attended a state high school. On the other hand, those who attended non-Catholic independent schools were more likely to take up an offer than those in state high schools. Finally, older students were a little more likely to take up their VUAC offer than younger students.

Thus, those applicants with lower HSC scores, those who lived in Victorian country areas, those who studied other than science courses an HSC, those who last attended (particularly) Catholic independent schools, females, and those who were younger, more frequently turned down their offers of college or university places, other things being equal. These are effects on a coarse distinction between enrolment decisions, however, and it is possible that more specific effects have been 'covered up' by combining into single categories those who declined and deferred and those who enrolled full-time and part-time.

The data in column D are co-efficients for the regression of the more specific contrast of decline versus accept full-time on the predictors of the basic model. The results are similar to those just described, except that the relative importance of the school effects has increased, the relative importance of the applicants' sex has decreased and the minor effect of age is now positive rather than negative. Taken in order of the relative importance of the effects, the metric co-efficients show that:

(i) for every increase of 10 points of aggregate HSC score, applicants were 2 percentage points less likely to have declined their offer than to have accepted it full-time;
(ii) science students were 8.5 percentage points less likely to have declined than non-science students;
(iii) metropolitan students were 10 percentage points less likely to have declined than rural students;
(iv) compared with those who last attended a state high school, applicants who attended a Catholic independent school were 4 percentage points more likely to decline, those who attended a non-Catholic independent school were about 3.6 percentage points less likely to decline, and those who attended an 'other' school were 14 percentage points more likely to decline;

(v) females were 2.3 percentage points more likely to decline than males;
(vi) older students were slightly more likely to decline than were younger students.

The most important differences between the effects on the general contrast between taking up as against turning down the VUAC offer, and declining as against accepting and enrolling full-time are those for sex, and the contrast involving non-Catholic independent schools. From this it follows (see column g) that both females and former non-Catholic independent school students were rather less likely than others to decline their offers as against defer them. The discrepancies in the results for age and 'other' schools are probably due to the fact that those who accepted part-time were excluded from the data analysed for the second contrast among enrolment decisions. Despite the magnitude of the effect for 'other' schools it is probably of little substantive significance.

Relationships between the variables in our basic model and the contrast between defer and accept full-time are not as strong as those for decline as against accept full-time, but the patterns are similar. The strongest relationship is with home location. Those applicants who came from rural areas were more likely than those from Melbourne to defer their offer as against accept it full-time. Of slightly less net importance in explaining the contrast between defer and accept full-time are the applicant's HSC course and the applicant's sex. Again, non-science students and females were more likely than others to defer offers as against accept full-time. School effects on this contrast appear, overall, to be relatively insignificant; students from 'other' schools were, however, much more likely than those from state high schools to defer as against enrol full-time. The net relationship between HSC score and the dependent variable is also relatively minor and that for age is negligible.

The results for the contrast between accept part-time and accept full-time tell a simple story. There is a strong relationship with age, and other relationships worthy of interpretation with HSC course, the contrast between 'other' schools and state high schools, and the applicant's sex and HSC score. Thus, those applicants who finally enrolled part-time rather than full-time were, other things being equal, more likely to be older, to have taken a non-science course at HSC, to have attended an 'other' school rather than a state high school and to have a slightly higher aggregate HSC score.

The final column of Table 3:7 shows the metric co-efficients for an equation predicting the contrast between those who deferred rather than declined their offer of a tertiary place. By far the strongest predictor of this contrast is the applicant's HSC score. For those who deferred and declined, each increase of 10 HSC aggregate points was associated with a 3% increase in the probability of deferring. Further analysis shows, however, that about 40% of this effect is mediated by the type of institution making the offer. Additionally, those from non-Catholic independent schools and 'other' schools, were more likely than those from state high schools to defer as against decline their offers; as were HSC science students and females when compared with their peers. Students from Catholic independent schools were more likely than those from state high schools to decline the offer of a tertiary place as against defer it.

Summary of the Direct Effects in the Basic Model

A further perspective on this basic model for predicting the outcome of a VUAC offer to HSC and alternative sixth year students can be obtained by examining Table 3:7 for direct effects across the rows.

Looking across the first row we find that females, when compared with males, were less likely to take a science HSC course, likely to score less well on the HSC aggregate and, generally, more likely to turn down their VUAC offer. Also, they were more likely both to decline and defer offers than males when these options were compared with enrolling full-time. Females were, however, more likely than males to enrol full-time as against

part-time and to defer their enrolment as against decline the offer outright. Compared with the other effects in each equation, the net effect of the applicant's sex is strongest when the dependent variable is HSC course type and relatively strong when the dependent variable is the contrast between deferring and accepting the offer of a place full-time.

Moving to the second row, we find that older students rather than younger students were less likely to take science courses and were likely to score lower on the HSC aggregate. They were also more prone to specifically decline places as against enrol full-time and more likely to enrol part-time as against full-time. Relative to other factors, age has its strongest effect in relation to enrolling part-time compared with full-time.

The third row of Table 3:7 shows that students from metropolitan areas, when compared with their rural peers scored higher on the HSC aggregate, were generally less likely to turn down as against take up their offer, and were less likely both to decline and defer as against enrol full-time. These effects on enrolment decisions are quite strong. Living in a rural area is the best available independent predictor of deferring as against enrolling full-time and follows a low HSC score as a predictor of turning down and declining. The co-efficients in column B suggest that the metropolitan/rural contrast has also an indirect effect on turning down, declining and deferring through rural students' lower HSC scores.

In the analysis of the effects of school type, Catholic, non-Catholic independent and 'other' schools were contrasted against state high schools. In these contrasts, students from Catholic independent schools had higher net HSC scores but, other things being equal, were less likely to have studied a science course at HSC and were more likely to turn down (to both decline and defer) places than state high school students. There thus appear to be contrary effects acting on the likelihood of students from Catholic schools accepting or deferring places. The lack of social status indices in this model restricts further analysis of these relationships. It is tempting to speculate that, in this instance, social status is the prior cause of the direct relationship between school type and the students' enrolment decisions, and that the direct impact of the school system is seen through the higher HSC scores of Catholic school students.

Also compared with applicants from state high schools, those from non-Catholic independent schools were more likely to have taken a science course at HSC, performed considerably better in terms of HSC aggregate scores, were less likely specifically to decline places as against accept full-time, and were more likely to defer as against decline places outright. Again, further analysis is necessary to tease out the relative importance of family social status and the direct influence of the school system on these outcomes.

As indicated earlier, we are a little reluctant to draw firm conclusions from the data on those applicants from 'other' schools. This is because the group is both very small compared with other groups and quite heterogeneous. Nonetheless, some relationships for this group compared with state high school students are relatively strong and consistent. Thus, compared with their peers from state high schools, those from 'other' schools were more likely to decline an offer as against accept full-time, and were more likely to defer and to enrol part-time as against full-time. When students who deferred rather than declined offers are compared, however, those from 'other' schools were much more likely to defer when compared with state high school students.

The inclusion of a variable representing the type of course an applicant took at HSC revealed strong differences between science and non-science students. In this comparison, other things being equal, science students scored considerably higher on the aggregate HSC score, were less likely than others to turn down their offer, and were less likely to defer as against accept full-time and less likely to enrol part-time rather than full-time. Also, they were more likely than others to defer as against decline. For science students, there appear to be indirect links through HSC score and direct effects leading to a greater likelihood of accepting full-time as against declining or deferring offers.

Finally, the last row in Table 3:7 shows the relationships between the applicants' HSC aggregate scores and their enrolment decisions. Relative to other variables in the respective equations, HSC score is the best independent predictor of the decision to take up rather than turn down a VUAC offer, to accept an offer full-time rather than to decline it, and to defer rather than to decline an offer. As we have described earlier, much of the relationship with take up versus turn down is independently mediated by the preference level of the offer and the type of institution making the offer. Further, about 40% of the relationship with defer/decline is mediated by the type of institution making the offer. As all students in the study actually received an offer of a place, one interpretation of these relationships with HSC aggregate score is that they represent the effects of the student's satisfaction with the course offered and their self-confidence about further study.

Some Mediated Effects in the Basic Model

The purpose of the analyses that we have presented so far has been to describe the direct effects of selected biographical, family and achievement variables on the decisions made by secondary students on whether or not to go on to tertiary education. As we argued in Chapter 1, it seems unlikely that the direct effects of the biographical characteristics or family backgrounds of students will, however, be amenable to change through educational interventions. If inequalities in access to tertiary education exist between males and females or ethnic groups, for example, it is those aspects of these inequalities which are mediated by the schools and tertiary institutions that can most valuably be the focus of policy. It seems likely, therefore, that the concern of policy makers will be with the direct effects of mediating variables (for the individual inequalities they produce in their own right) and the indirect effects of predetermined variables (for those aspects of group inequalities that are amenable to policy initiatives). An exclusive focus on direct effects can also result in underestimates of the extent of the influence of biographical, family and early achievement variables on later educational achievements. These can lead to conclusions about the apparent equity of social and educational systems that, on closer analysis, are not properly justified.

We presented a simplified example in Chapter 2 where we estimated the effect of sex and home location on the applicants' two-way enrolment decision from models which both included and excluded the type of HSC course studied and the aggregate HSC results. These estimates were the total and direct effects of sex and home location on enrolment decisions respectively. In these analyses, the total effect of sex (net of the other predetermined variable) was reduced by about 25% by the inclusion of the achivement variables. As HSC course and HSC performance, in addition to enrolment decision, reasonably can be regarded as outcomes of unequal educational opportunities, the effects of sex as mediated through course and performance should be included in any estimate of sex inequality. It can be seen that the inappropriate inclusion of large numbers of mediating variables in models of transition to tertiary education, and the exclusive description of the direct effects in those models, could lead to conclusions of relative equality where considerable inequality may exist. An analysis of the direct and indirect effects of predetermined variables on enrolment decisions thus serves two purposes. They are:

(i) to provide more accurate estimates of group inequalities in access to tertiary education;
(ii) to provide indications of where these inequalities are mediated by achievement and social-psychological variables that might be amenable to policy initiatives.

Data for an analysis of direct and indirect effects in our basic model as they relate to the two-way decision to take up or turn down an offer are shown in Table 3:8. We focus our discussion on the indirect effects of sex, home location, school type and HSC course type.

TABLE 3:8
DIRECT AND INDIRECT EFFECTS ON TWO-WAY DECISION IN THE BASIC MODEL OF TRANSITION

Independent Variables	Total Effect on Two-Way Decision	Indirect Effect via HSC Course Type and HSC Score	Indirect Effect via HSC Score Net of HSC Course Type	Direct Effect
Sex (1 = female, 0 = male)	0.082	0.026	0.003	0.053
Age	−0.005	0.005	0.005	−0.015
Home location (1 = metropolitan, 0 = non-metropolitan	−0.114	0.000	−0.010	−0.104
School type (vs State High School)	(0.065)	–	–	(0.049)
Catholic Independent	0.038	0.003	−0.010	0.046
Non-Catholic Independent	−0.049	−0.003	−0.030	−0.016
Other	0.002	−0.004	−0.006	0.013
HSC course (1 = Science, 0 = other)	−0.107	–	−0.019	−0.088
HSC score	−0.0019	–	–	−0.0019

Note: The co-efficients presented are in unstandardised form except for the sheaf co-efficient for school type. Minor discrepancies in totals across the rows are due to rounding error.

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The total effect of the applicants' sex on the two-way decision is 0.082 in metric units. That is, over and above the effects of age, home location and school type only, about 8 percentage points more females than males turned down their VUAC offer. Of this, 0.053 units or about 65% of the total effect is direct, 0.003 units (or about 4%) is indirect and mediated through HSC score alone and 0.026 units (or about 32%) is indirect and mediated through HSC course type including its subsequent effect on HSC score. Thus, the total effect of sex on the two way decision is over half as large again as its direct effect, and the majority of the additional indirect effect is due to fewer female applicants taking science courses at HSC.

The total effect of the applicants' home location is −0.114. The other predetermined variables being equal, over 11 percentage points fewer metropolitan students than those living in non-metropolitan areas turned down their offer. Over 90% of the total effect (−0.104) is direct, however, and about 9% is mediated through the higher HSC scores of metropolitan students.

The data for school type are shown in the form of the 'sheaf' co-efficient for the total and direct effects, and in the form of unstandardised co-efficients from the specific between-school contrasts for the total, direct and indirect effects. The 'sheaf' co-efficients suggest that most of the overall effect of school type is direct (75%). Examination of the individual contrasts, however, shows that the interpretation is questionable and suggests that the 'sheaf' co-efficient cannot be partitioned into direct and indirect effects because it indexes the magnitude of effects alone and disregards their direction. Co-efficients for the specific between-school contrasts show that there is, indeed, a strong indirect effect for the contrast between non-Catholic independent schools and state high schools through HSC score. Compared with state high school students, and sex, age and home location being equal, almost 5% more non-Catholic independent school students than state high school students took up their VUAC offers. Of this total effect, 61% is indirect through the applicants' HSC scores (which were higher for independent school students) and only 33% is direct.

Finally, the direct effect of the applicants' HSC course was −0.107 in metric units. That is, almost 11 percentage points fewer non-science students took up their VUAC offers. Of this effect, −0.088 units or about 82% is direct and about 18% is mediated through the lower HSC scores of non-science students.

NOTES

1. A detailed analysis of the transition to tertiary education of Victorian TOP students will be the subject of a later report.
2. A "science course" is defined as a course of four or more subjects containing three or more of Chemistry, Physics, Applied Mathematics, Pure Mathematics, General Mathematics, Agricultural Science, Biology, Earth Science, Environmental Science, Geography or Physical Science.
3. The discrepancies between figures quoted in this chapter and those in Chapter 2 occur because here we are dealing with accurate population values whereas in Chapter 2 (and later in Chapters 5 and 6) we present estimates from our survey data which are prone to sampling errors.
4. The four-category variable 'school type' is represented by three dummy variables in our analyses which enable Catholic independent schools, non-Catholic independent schools and 'other' schools to be compared to state high schools as a control group. The metric co-efficients can be interpreted as simple percentage shifts between the two categories of a contrast. Individual standardised co-efficients for dummy variables are of little value for understanding direct effects, however, and instead we present Heise's (1972) "sheaf" co-efficient which summarises the combined effects of the three school type contrasts. It should be noted that, as the 'sheaf' co-efficient indexes the general effect of a multi-category variable, its sign is not important.
5. There are, additionally, difficulties with an absolute interpretation of R and R^2 for dichotomous dependent variables. The maximum value of R^2 in this situation is not necessarily +1.0 and so a clear 'proportion of variance accounted for' interpretation is not possible. We use R simply to **compare** the predictive value of different models.

CHAPTER 4

FIVE ELABORATIONS OF THE BASIC MODEL

In the preceding chapter we described the relationships among five basic predictor variables and their effects, in turn, on five contrasts among the students' enrolment decisons. In this chapter we elaborate the basic model by introducing, one at a time, five more sets of dummy variables. We have three purposes for these analyses. First, we wish to explore, in finer detail, the effects of the students' home locations and type of HSC course on their enrolment decisions. Secondly, by introducing sets of dummy variables which represent contrasts among the level of the students' preference for the offer finally received, the type of institution making the offer, and the type of course offered, we plan to explore the extent to which relationships in our basic model are mediated by preference, institution and course. Thirdly, we are interested in assessing the net direct effects of these three sets of mediating variables.

In presenting the data for these analyses, we first concentrate on the direct effects combined with an informal description of indirect effects. In the last section, the formal analysis of the direct and indirect effects of the predetermined variables is extended by examining the extent to which their effects on the two-way decision are further mediated by preference, institution and course. Metric co-efficients are used in these analyses as they may be interpreted directly in probability or percentage terms as explained in Chapter 2.

Home Location

In Chapter 3 it was seen that a variable representing the simple contrast between the metropolitan and non-metropolitan home addresses of VUAC applicants was quite strongly related to the contrasts between take up and turn down the offer, decline and accept full-time, and defer and accept full-time. Non-metropolitan students, very largely as a direct effect of their home location were more likely to turn down (both decline and defer) offers of college and university places.

In order to investigate specific regional effects on enrolment decisions, a set of fifteen dummy variables was constructed to contrast the South-eastern suburbs of Melbourne with each of fourteen other localities in turn. For the purpose of these contrasts, the home locations of respondents were categorized into fifteen groups as follows: six country regions, the three major country cities of Geelong, Ballarat and Bendigo and their surburbs, five groups of Melbourne suburbs and, finally, a region we named 'Metropolitan outskirts'.[1] We then calculated seven regression equations in a manner similar to that used for Model 1 in Chapter 3, except that the fourteen dummy variables for home location were utilized to provide more detailed regional effects than the simple metropolitan versus non-metropolitan dichotomy of Model 1. The metric regression co-efficients for this model (Model 2) are shown in Table 4:1.

In inspecting the data for Model 2, it is first worth noting that the co-efficients in the rows for the student's sex, age, school type, HSC course type and HSC score are virtually identical to those for Model 1 (Table 3:7). That is, inclusion of information on the specific location of the students' homes does not greatly alter the effects from those found in our basic model where a broad metropolitan versus non-metropolitan distinction is used. The multiple correlations between the predictor variables and the criterion is, additionally, only slightly greater where detailed information on home location is used. We will expect, therefore, that this more detailed information will add only minor refinements to the conclusions drawn about the effects of home location from the simple metropolitan versus non-metropolitan contrast.

TABLE 4:1

MODEL 2: DETAILED ANALYSIS OF REGIONAL EFFECTS ON ENROLMENT DECISIONS

Independent Variables	Dependent Variables						
	A HSC Course Type	B HSC Score	C Turn down VS Take up	D Decline VS Accept Full-time	E Defer VS Accept Full-time	F Accept Part-time Full-time	G Defer VS Decline
	N=13699 R=0.26	N=13696 R=0.28	N=13696 R=0.25	N=11651 R=0.28	N=10917 R=0.17	N=9368 R=0.22	N=4336 R=0.23
Sex (1=Female, 0=Male)	−0.239	−1.18	0.053	0.022	0.046	−0.014	0.025
Age	−0.044	−2.80	−0.015	0.010	−0.004	0.032	−0.007
Home location (VS S.E. Suburbs)							
Western Suburbs	0.020	−11.03	−0.061	−0.020	−0.061	0.014	−0.065
Northern Suburbs	−0.033	−4.88	−0.017	−0.002	−0.019	0.008	−0.024
N. Eastern Suburbs	0.004	0.93	−0.001	−0.023	−0.004	−0.004	−0.033
Southern Suburbs	−0.032	1.81	−0.007	0.011	−0.015	−0.009	−0.027
Metropolitan Outskirts	−0.002	−7.41	0.042	0.039	0.014	0.007	−0.033
Ballarat	−0.041	−3.71	0 110	0.160	0.005	0.002	−0.182
Bendigo	−0.024	−5.10	0.021	0.025	0.004	0.014	−0.051
Geelong	−0.060	−5.54	0.047	0.006	0.059	−0.006	0.070
South-West Country	−0.061	−6.05	0.157	0.140	0.119	−0.001	−0.001
North-West Country	−0.036	−9.08	0.144	0.181	0.058	0.017	−0.097
South-Central Country	0.034	−10.12	0.133	0.139	0.073	0.009	−0.071
North-Central Country	0.080	−4.19	0.075	0.068	0.053	−0.013	0.013
North-Eastern Country	0.002	−2.35	0.134	0.128	0.106	−0.022	0.028
South-Eastern Country	0.053	−11.19	0.087	0.064	0.066	0.005	0.018
School Type (VS State High School)							
Catholic Independent	−0.020	5.12	0.046	0.039	−0.019	0.003	−0.032
Non-Catholic Independent	0.029	14.42	−0.018	−0.033	−0.004	−0.006	0.066
Other	0.043	2.69	0.014	0.144	−0.118	0.050	0.149
HSC Course Type (1=science, 0=other)		10.18	−0.087	−0.084	−0.051	−0.038	0.036
HSC Score			−0.0019	−0.0020	−0.0005	0.0002	0.0027

The first column of Table 4:1 does, however, show that there were some regional differences in the percentages of students who received offers of tertiary places and had taken an HSC science course, (other things being equal) which were 'covered up' by the broad distiction between metropolitan and non-metropolitan home locations, but the differences do not reveal any consistent pattern in student preferences for science. Other things being equal, students who received offeres of places and whose home addresses were in North-central Victoria were the most likely to have taken science at HSC, whereas those in Geelong and the South-west of the state were the least likely to have taken science. Differences among students living in various suburban regions of Melbourne were less distinct. It is worth noting, however, that students living in the Western suburbs of Melbourne, other things being equal, were most likely of all suburban students to have taken science at HSC. There are a number of possible explanations for these apparent differences in the frequency of students who took certain types of HSC course according to different, geographic regions of Victoria. We will not develop them in detail here, but we would like to note that, to the extent that these results might reflect regional differences in access to school science courses in Victoria, they are worthy of replication and further investigation.

The data in Column B of Table 4:1 show the effects of Victorian suburban and country regions, contrasted with the South-eastern suburbs, on the students' aggregate HSC scores for the population who received offers of places. Here again we can see clearly the relatively low HSC scores of country students, other things being equal. There are some distinct differences between the country regions, however, and the rank order of net average HSC scores does not appear to reflect only the geographic isolation of the students' homes. Certainly students living in the more isolated regions of Victoria, the South-east and the North-west, had relatively low aggregate HSC scores. But low net average scores were also recorded for those living in the South-central country region and the Metropolitan outskirts.

The other salient co-efficients for geographic regions are those for the Western and Northern suburbs. Other things being equal, students from the Western suburbs scored, on average, 11 points lower on the HSC best-four aggregate compared with students from the South-eastern suburbs. Similarly, those from the Northern suburbs scored an average of 5 aggregate HSC points lower. We pointed out earlier that, particularly with regard to school system and regional effects, our model is poorly specified in that measures of the student's intelligence, and family social status and 'rurality' are not included. Thus we cannot claim that these regional differences in students' HSC scores are due to differences between suburbs and country regions in educational provision rather than to differences in student ability or family support. However, the facts of the relatively poorer performance of country students and those from Melbourne's Western and Northern suburbs are in agreement with widely held expectations.

Data which describe the relative effects of the suburban or regional location of the applicants' homes on their enrolment decisions are found in the last five columns of Table 4:1. The co-efficients for the contrasts between the four suburban areas and the South-eastern suburbs are generally low. This suggests that there were few differences in enrolment decisions of suburban students which can be explained by a more detailed knowledge of where they live after other variables in the model have been taken into account. There are, perhaps, two exceptions to this generalization. First, students from the Western suburbs, when compared with those from South-east Melbourne, were less likely to turn down as against take up their offer of a place. Specifically, they were less likely both to decline and defer their offers as against accept full-time; but were particularly unlikely to defer. They were also less likely to defer compared with reject their offer. Secondly, all other suburban students, when compared with those of the South-eastern suburbs, were less likely to defer their enrolment rather than to reject the offer of a place. It is possible that this effect is directly related to the socio-economic circumstances of many

students from South-eastern Melbourne; that they were among the most able to find family support for a year's travel or to return to school for a second attempt at HSC in order to enter a course where competition for places is high.

The results for country students show that those from most country regions were more likely than those from South-eastern Melbourne to turn down as against take up their offers, and were both more likely to decline and defer their offers as against accept them on a full-time basis. The exceptions are for students from the three major Victorian country cities. Compared with students from South-eastern Melbourne there is little difference in the net percentage of those from Bendigo and Geelong who declined rather than accepted full-time, and little difference in the net percentage of those from Ballarat and Bendigo who deferred rather than accepted full-time. Students from Ballarat, however, were very much more likely to decline rather than accept full-time and those from Geelong were rather more likely to defer. We suspect that these exceptions might reflect differing admissions policies or data recording methods in the local institutions. This, particularly, might account for the higher relative net percentage of those students from Ballarat who were recorded as declining as against deferring their offers, as the Ballarat College of Advanced Education does not have any formal deferral arrangements.

These detailed data for home location effects can also be interpreted by reading across the rows of Table 4:1. An example of interest is for students who lived in the Western suburbs. Compared with those from South-east Melbourne, 2 per cent more Western suburban students studied science at HSC, other things being equal; but on average the Western suburbs students scored a net 11 HSC aggregate points lower. Net of other effects and as compared against those from South-east Melbourne, Western suburbs students were also less likely to have turned down their final offer from the VUAC. They were slightly less likely to decline their offer as against accept full-time and were also less likely to defer as against accept full-time. They were also slightly more likely to accept part-time as against full-time, and rather less likely to defer as against decline. Data from simple cross-tabulation analyses we have performed show that the gross percentage of Western suburbs applicants who declined their offers (17.6%) was slightly greater than that of South-eastern suburbs applicants (16.2%). This difference of 1.4% is reversed to –2% when the relationship is considered net of sex, age, school type, HSC course and HSC result. It is apparent that the minor disadvantage suffered by Western suburbs students in decisions at the final barrier to transition to higher education is the result of an indirect effect of their considerably lower aggregate HSC scores.Thus it appears that any inequality in transition to tertiary study affecting students in Melbourne's Western suburbs, **once they have reached HSC and applied for a tertiary place**, reflect educational disadvantages rather than direct socio-economic disadvantage. Similar detailed interpretations of regional effects may be given to the co-efficients for the other suburban and country regions as compared to the South-eastern suburbs. By assuming that the South-eastern suburbs have co-efficients of zero, their position relative to other regions may also be evaluated.

HSC Course

We introduced the dichotomous science versus non-science variable into our basic model as data from the Victorian Institute of Secondary Education (1981) indicates that the proportions of students passing and gaining high grades at HSC are, generally, greater in science subjects. Also, we suspected that science students might have formed an earlier and more consistent view of a possible career (see, for example, the work of Hudson: 1967, 1970). The analyses described in Chapter 3 have shown clearly that science students are likely to be advantaged over others in transition to higher education. Both directly, and indirectly through their higher aggregate HSC score, science students were less likely to decline and defer offers than others. We felt it was possible, however, that the broad category of 'non-science' students incorporated other groups with equally firm commit-

ments to tertiary education. Accordingly, we examined the patterns of subjects taken by the 'non-science' group in an attempt to define other consistent course types.

After testing some more detailed classifications, we were able to establish four groups of students according to course type. They were: (i) Science students; those taking three or more of Chemistry, Physics, Applied mathematics, Pure mathematics, General mathematics, General mathematics (computing option), Biology, Earth science, Agricultural science, Physical science, Geography. (ii) Humanities students; those taking three or more of; English literature, any language study, any history, any music, Geography, Art, Graphic communication, Biblical studies, Classical civilization, Politics. (iii) Commerce-Social science students; those taking any three of: Accountancy, Commercial and legal studies, Economics, or those taking any two of these commerce subjects and any two of; one or more histories, one or more mathematics, Geography, Home economics, Politics. (iv) Mixed-course students; those taking four or more HSC subjects who could not be classified as Science, Humanities or Commerce-social science.[2]

The four-fold classification of subjects was coded as three dummy variables for the analysis. Each subject group was contrasted against the science group as the control. For the analysis, the three HSC course type dummy variables replaced the science versus non-science contrast in the basic model. Six regression equations were calculated in which the students' sex, age, home location, school type and HSC course type were used to predict HSC aggregate score, and all these variables in turn were used to predict the five contrasts among the enrolment decisions. The results in the form of metric regression co-efficients are shown in Table 4:2.

First, we might compare the co-efficients for sex, age, home location, school type and HSC score in Table 4:2 with those in Table 3:7. This comparison shows the extent to which detailed information about the applicants' HSC course might moderate our earlier conclusions. The only co-efficients which have changed in any way noticeably from Model 1 to Model 3 are those for the student's sex. In particular, whereas we estimated from Model 1 that 5.3% more females than males turned down their offers as against took them up, the estimate from Model 3 is 4.6%. Also we estimated from Model 1 that 2.3% more females than males declined their offers as against accepted them full-time, whereas the estimate from Model 3 is 1.8%. Finally, in Model 1 we estimated that a net 1.4% fewer females than males enrolled part-time. Model 3 shows that this sex difference in negligible when considered net of our detailed coding of HSC course type. Thus all sex effects on enrolment decisions, except one, are reduced when the detailed HSC course type is introduced into the model. The exception is the contrast between defer and decline. We conclude that the type of HSC course a student takes is an important mediator of sex differences in subsequent enrolment decisions.

From the regression analyses of Model 3 we can also explore the direct relationships between the applicant's HSC course, HSC aggregate score, and enrolment decisions. The data in the first column show that, when compared with applicants who took an HSC Science course and other things being equal, Humanities students scored an average of 6 HSC aggregate points lower, Commerce-Social science students about 11 points lower, and those taking a Mixed HSC course an average of 13 points lower. This rank order of Science, Humanities, Commerce and Mixed courses recurs for the decline versus accept full-time contrast (column C) and the defer versus accept accept full-time contrast (column D). In both cases it was the students from HSC Science courses who were most likely to accept places followed by students from Humanities, Commerce and Mixed courses in that order. We should stress here that these effects on enrolment decisions are net of HSC score. The identical rank order suggests that there might be a common factor underlying the students' HSC scores and their decision to continue full-time with higher education. Turning to column E, we can see that Humanities and Mixed course students were only a little more likely to enrol part-time as against full-time compared with Science students. Commerce-Social science students were considerably more likely to enrol part-time.

TABLE 4:2

MODEL 3: DETAILED ANALYSIS OF HSC COURSE TYPE EFFECTS

Independent Variables	Dependent Variables					
	A HSC Score	B Turn down VS Take up	C Decline VS Accept Full-time	D Defer VS Accept Full-time	E Accept Part-time VS Full-time	F Defer VS Decline
	N = 13696 R = 0.27	N = 13696 R = 0.25	N = 11645 R = 0.27	N = 10912 R = 0.16	N = 9368 R = 0.24	N = 4331 R = 0.22
Sex	−1.54	0.046	0.018	0.045	−0.001	0.030
Age	−2.86	−0.015	0.010	−0.004	0.033	−0.006
Home location (1 = metropolitan, 0 = rural)	5.03	−0.101	−0.096	−0.066	−0.001	0.016
School Type (VS State High School)						
Catholic Independent	4.89	0.047	0.042	0.020	0.003	−0.031
Non-Catholic Independent	15.48	−0.018	−0.037	0.006	−0.005	0.070
Other	2.98	−0.012	0.140	0.114	0.058	0.152
HSC Course Type (VS Science)						
Humanities	−5.93	0.064	0.055	0.029	0.017	−0.041
Commerce-Social Science	−10.72	0.054	0.065	0.045	0.079	−0.021
Unclassified	−13.08	0.118	0.128	0.079	0.015	−0.048
HSC Score		−0.0019	−0.0020	−0.0004	0.0002	0.0027

Column F shows that Science students were the least likely to decline rather than defer. They were followed by Commerce-Social science students, Humanities students and those who took Mixed courses. In combination, these contrasts in enrolment decisions led to the general result shown in column B. Science students were the least likely to turn down their VUAC offer, other things being equal. Commerce-Social science students and Humanities students were 5.4 and 6.4 percentage points more likely to turn down their offer, whereas those who took a Mixed course were almost 12 percentage points more likely to turn down their VUAC offer.

Many of these direct effects of course type on enrolment decisions are substantial. Perhaps they can be seen most clearly when we look across the rows of Table 4:2. Other things being equal, 6.4% more Humanities than Science students turned down their VUAC offers, 5.5% more declined their offers as against accepted them full-time, 3% more deferred as against accepted full-time, 2% more enrolled part-time as against full-time and 4% more declined rather than deferred their offers. For Commerce-Social science students compared with Science students in the same way, 5.4% more turned down their offers, 6.5% more declined, 4.5% more deferred, 8% more enrolled part-time, and 2% more declined rather than deferred. With the exception of part-time enrolment, the strongest effects were for the group of HSC students whose courses drew from a variety of subject fields. Here, compared with Science students and other things being equal, about 12% more turned down their offers as against took them up, 13% more declined, 8% more deferred, 1.5% more enrolled part-time (all as against those who enrolled full-time), and about 5% more declined rather than deferred their offers. Additionally, we must add to these direct effects the possibility of indirect effects of HSC course type mediated through the consistently lower average HSC scores of groups other than Science students.

The Preference Level of the Offer

As we mentioned in Chapter 1, the data we obtained from the VUAC for this study contained information on the preference level of the final offer made to the applicant. The VUAC application form allows each applicant the opportunity to nominate up to eight separate courses in the same or different institution in order of preference. Applicants are also given the opportunity to modify these preferences, or to nominate new courses, after the HSC examination results are released. Additionally, an applicant may accept an offer made during the first round but may wait for a second round offer of a course originally nominated higher on the preference list, or may approach a participating institution directly for a place in a course which may have been lower on the preference list or unlisted altogether. The VUAC records the preference level of the final offer made to each applicant in their computer files. Should an offer result from a direct approach to an institution, the VUAC records the offer as a '9th preference' and the applicant is required to forego any further offer from the system.

We calculated simple cross-tabulations betwen the preference level of the final offer and the applicants' enrolment decisions. The tables showed a considerably lower frequency of declining of '9th preference' offers compared with all others, and a consistent increase in the frequency of declining from the 1st to the 8th preference. It appears, therefore, that the '9th preference' functioned as higher than a first preference application for those who took the option. Thus, in analysing the data for preference level, we placed '9th preference' offers at the head of the list of preferences. We then formed a set of dummy variables in which each of the '9th', and 2nd to 8th preferences, were contrasted against the first preference.

Following the causal model developed in Chapter 1 we regarded these dummy variables as a set of intervening variables between the applicant's HSC score and enrolment decision. We calculated five regression equations, one for each enrolment decision. In each equation the predictor variables were those from the basic model (Model 1) plus

TABLE 4:3

MODEL 4: PREFERENCE LEVEL EFFECTS ON ENROLMENT DECISION

Independent Variables	Dependent Variables				
	A Turn down VS Take up	B Decline VS Accept Full-time	C Defer VS Accept Full-time	D Accept Part-time VS Full-time	E Defer VS Decline
	N = 13696 R = 0.29	N = 11651 R = 0.32	N = 10917 R = 0.19	N = 9367 R = 0.22	N = 4336 R = 0.22
Sex (1 = female, 0 = male)	0.053	0.025	0.046	−0.015	0.023
Age	−0.014	0.009	−0.003	0.032	−0.007
Home Location (1 = metropolitan, 0 = rural)	−0.108	−0.103	−0.071	−0.000	0.017
School Type (VS State High School)					
Catholic Independent	0.048	0.033	0.014	0.003	−0.031
Non-Catholic Independent	−0.021	−0.039	0.003	−0.007	0.069
Other	0.010	0.138	0.110	0.057	0.158
HSC Course Type (1 = Science, 0 = other)	−0.097	−0.093	−0.059	−0.037	0.038
HSC Score	−0.0013	−0.0014	−0.0002	0.0001	0.0025
Preference Level (VS 1st Preference)					
'9th' Preference	−0.211	−0.176	−0.124	−0.020	0.036
2nd Preference	0.072	0.054	0.058	−0.005	0.026
3rd Preference	0.084	0.069	0.069	−0.011	0.028
4th Preference	0.136	0.132	0.081	−0.012	−0.025
5th Preference	0.158	0.197	0.072	−0.005	−0.079
6th Preference	0.148	0.251	0.092	−0.019	−0.091
7th Preference	0.196	0.236	0.079	−0.035	−0.076
8th Preference	0.212	0.255	0.092	−0.032	−0.086

the preference level dummy variables, and the dependent variable was one of the contrasts among the enrolment decisions. The metric regression co-efficients for these equations are shown in Table 4:3.

The increases in the multiple correlation co-efficients for the equations of Model 4 compared with Model 1 are modest, the largest being for the contrasts between turn down versus take up, and decline versus accept full-time. None-the-less, the pattern of the direct effects of the preference level of the offer are clear and consistent, and for the turn down versus take up and decline versus accept full-time contrasts the effects are also substantial. The co-efficients of column A, for example, show that, other things being equal, over 21% fewer applicants turned down rather than took up a 9th preference offer as against a first preference offer. Again, other things being equal, generally more applicants turned down successively lower preference offers as against first preference offers. These net differences ranged from 7% for 2nd preference offers to over 21% for 8th preference offers. There is a very similar pattern for the contrast between decline and accept full-time (column B). Here, other things being equal, almost 18% fewer applicants declined rather than accepted full-time a 9th preference offer as against a 1st preference offer. Further, between 5.5% and over 25.5% more applicants declined lower preference offers rather than accepted them to enrol full-time.

Similarly, applicants were less likely to defer, as against accept full-time, '9th preference' offers compared with 1st preference offers (column C). This increasing tendency to defer rather than accept lower preferences, however, was not as clear or consistent as the increasing tendency to decline lower preferences.

Column D of Table 4:3 shows that, when compared against accept full-time, applicants were more likely to accept 1st preference offers part-time compared with offers at all other preference levels. While the differences are only slight, this suggests that enrolling part-time was, for many, a **preferred strategy.** We have previously observed that those enrolling part-time were, on average, older than other applicants and were more likely to have taken a Commerce-Social science HSC course and to have attended an 'other' school for HSC. These observations together suggest that many applicants who enrolled part-time constitute a distinctive group of students who had a firm intention of attending a tertiary institution part-time when they made their VUAC application.

The last column of Table 4:3 shows that the preference level of the offer was related to the applicant's propensity to defer rather than to decline it. Those students who were offered courses listed as their fifth preference or lower were less likely to defer the offer and hence more likely to decline it than those getting their first preference. This result may indicate that, at about the fifth preference level, the applicants' commitment to the course offered is so slight as to make him or her less likely to consider the option of deferring entry for a year, and more likely to decline it outright. That applicants should be more likely to defer and less likely to decline a second, third or fourth preference offer than a first preferred course is puzzling, but might indicate that a higher level of uncertainty is attached to taking a positive decision on offers at these preference levels.

It is finally worth noting that the mediating effects of introducing the preference level of the offer into our basic model are minor. The only noticeable impact is on three of the co-efficients for HSC score. Knowing the preference level of the offer reduces the net increase in the frequency of those who took up as against turned down the VUAC offer of 1.9% for every 10 points of HSC aggregated score to 1.3%, and reduces the net increase in those who accepted full-time as against declined of 2.0% for every 10 points of score to 1.4%. Similarly, the net increase in the frequency of those who deferred as against accepted full-time is reduced from 0.5% for every 10 points of HSC score to 0.2%. That is, the preference level of the offer accounts for about 32% of the effect of HSC score on the contrasts between take up and turn down, and decline and accept full-time, and 60% of the effect of HSC score on the contrast between defer and accept full-time.

TABLE 4:4

MODEL 5: TYPE OF INSTITUTION EFFECTS ON ENROLMENT DECISIONS

Independent Variables	Dependent Variables				
	A Turn down VS Take up	B Decline VS Accept Full-time	C Defer VS Accept Full-time	D Accept Part-time VS Full-time	E Defer VS Decline
	N=13695 R=0.25	N=11561 R=0.33	N=10917 R=0.19	N=9367 R=0.25	N=4336 R=0.39
Sex (1=Female, 0=Male)	0.043	0.015	0.040	−0.009	0.027
Age	−0.015	0.010	−0.004	0.032	−0.008
Home location (1=Metropolitan, 0=Rural)	−0.091	−0.063	−0.067	0.003	0.005
School type (VS State High School)					
Catholic Independent	0.048	0.045	0.018	0.002	−0.028
Other	0.020	0.140	0.108	0.066	0.115
HSC Course type (1=Science, 0=other)	−0.076	−0.071	−0.046	−0.042	0.021
HSC Score	−0.0017	−0.0012	−0.0007	0.0003	0.0016
Offering Institution (VS University)					
Metropolitan CAE	0.027	0.162	−0.100	0.042	−0.391
Regional CAE	0.093	0.265	−0.052	0.038	−0.326
Teachers' College	0.098	0.142	0.015	−0.023	−0.204

The Type of Institution Making the Offer

As we outlined in Chapter 1, the VUAC processed applications in 1980 for courses in all Victorian tertiary institutions with the exception of the three teachers' colleges affiliated with the Institute of Catholic Education, the two Victorian agricultural colleges, the Burnley Horticultural College and the Victorian College of the Arts. Applications for TAFE courses are also not dealt with by the VUAC. It was therefore possible for us to make a clear four-fold classification of the institutions to which our population of students applied in 1980. Our classification is:

(i) Universities: Deakin, LaTrobe, Melbourne, Monash
(ii) Metropolitan Colleges of Advanced Education: Caulfield, Footscray, Prahran, Preston, Royal Melbourne Institute of Technology, Swinburne (which are all multipurpose colleges) and the two paramedical colleges, the Lincoln Institute of Health Science and the Pharmacy College
(iii) Regional Colleges of Advanced Education: Ballarat, Bendigo, Gippsland and Warrnambool
(iv) Metropolitan colleges specialising largely in teacher education: Burwood, Coburg, Frankston, Melbourne and Toorak State Colleges.

This four-fold classification of institutions was coded as three dummy variables for our analysis in which Metropolitan CAEs, Regional CAEs and Metropolitan Teachers' Colleges were contrasted against Universities as the control group. Table 4:4 shows the metric regression co-efficients for five equations in which all the variables of our basic model together with these dummy variables representing the type of institution were used to predict the five contrasts among the applicants' enrolment decisions.

In looking at the data of Table 4:4 we might first note that, for some equations, there is a quite noticeable increase in the multiple correlation co-efficient over that of the equivalent equations shown in Table 3:7. For Model 1, in particular, there are increases in R for the contrast between decline and accept full-time and the contrast between decline and defer. Thus the type of institution making the offer appears to have a substantively significant independent effect on applicants' enrolment decisions when considered net of the variables of our basic model. We can now examine the nature and direction of these effects.

Table 4:4 shows large direct effects on the applicants' decisions of the type of institution making a final offer of a place, particularly for the contrasts between decline and accept full-time (column B). Other things being equal, those offered a place in a teachers' college were more likely than those offered a university place to decline by a margin of 14%. This difference was even larger for metropolitan CAEs (16%) and, particularly, regional CAEs (26.5%). It is important for us again to emphasise here that we are describing net effects over such variables as home location and HSC score (although not parental social status). That is, the effect of (for example) receiving an offer from a regional CAE cannot be explained by the likelihood that those offered places came from rural homes or had lower HSC scores. Rather, we are describing effects which are unique to the contrasts between institutions, irrespective of the effect of other variables in the analysis such as home location and HSC score.

The effects on the contrast between deferring an offer and accepting full-time show a different pattern (column C). Students offered a place in a metropolitan CAE were the least likely to defer as against enrol full-time (a net 10% fewer than those offered university places), whereas those offered a teachers' college place were the most likely to defer (a net 1.5% more than university offers). These different patterns of deferring and declining result in the relatively modest direct effects of institution on the general contrast between turning down and taking up the offer (column A) and in the large co-efficients for the contrast between decline and defer (column E). Overall, only about 3% more applicants to

TABLE 4:5

METRIC CO-EFFICIENTS FOR THE EFFECT OF OFFERING INSTITUTION ON ENROLEMENT DECISIONS NET OF SEX, AGE, HOME LOCATION, SCHOOL TYPE, HSC COURSE TYPE, HSC SCORE AND THE PREFERENCE LEVEL OF THE FINAL OFFER RECEIVED

Independent Variables	Dependent Variables				
	Take up VS Turn down	Decline VS Accept Full-time	Defer VS Accept Full-time	Accept Part-time VS Full-time	Defer VS Decline
Offering Institution (VS University)					
Metropolitan CAE	0.032	0.166	−0.095	0.041	−0.391
Regional CAE	0.099	0.266	−0.045	0.037	−0.326
Teachers' College	0.099	0.143	0.017	−0.024	−0.204

TABLE 4:6

MEDIATING EFFECTS OF INSTITUTION TYPE ON THE EFFECTS IN THE BASIC MODEL ON THE CONTRAST BETWEEN DECLINE AND ACCEPT FULL-TIME

Independent Variable	Direct Effect From The Basic Model	Direct Effect After Inclusion of Institution Type	Effect Mediated By Institution Type	Percentage of Basic Model Effect Mediated by Institution Type
Sex	0.023	0.015	0.008	35%
Age	0.010	0.010	—	0%
Home Location	−0.099	−0.063	−0.036	36%
School Type (VS State High School)				
Catholic Independent	0.040	0.045	−0.005	−13%
Non-Catholic Independent	−0.036	−0.017	−0.019	53%
Other	0.139	0.140	−0.001	—
HSC Course Type	−0.085	−0.071	−0.014	16%
HSC Score	−0.0020	−0.0012	−0.0008	40%

Note: The co-efficients are in unstandardised form

metropolitan CAEs than to universities turned down their VUAC offers and, similarly, about 9% more applicants to the regional CAEs. Because they were more likely than university applicants both to decline and defer their offers (as against enrol full-time), applicants to teachers' colleges and were the most likely, generally, to turn their offers down (at a rate about 10% higher than university applicants). The negative signs for all co-efficients in Column E indicate that those offered university places were the most likely to defer as against decline. On the other hand, those offered places in metropolitan CAEs were the most likely to decline their offers as against defer them. In interpreting these results on relative rates of deferring and declining it should be kept in mind that differing policies between institutions on deferring as an enrolment option may be playing an important role.

The third column of Table 4:4 shows some minor net effects of type of institution on the liklihood of a student enrolling part-time as against full-time. As we might expect from the availability of courses which can be taken part-time, those offered places by metropolitan and regional CAEs were, other things being equal, most likely to enrol part-time as against full-time, and those offered places by teachers' colleges were the least likely to enrol part-time.

It might reasonably be argued that the direct effects of the offering institution we have described are at least partly spurious. One particular possibility is that much of the institutional effect could be due to more lower preference offers being made by colleges rather than universities, and that applicants were more likely to reject these lower preference offers. To check this possibility we calculated regression equations for a model which contained a set of dummy variables representing the preference level of the offer in addition to the variables of Model 5. The metric regression co-efficients, for the institution contrasts only, derived from these equations are presented in Table 4:5. With some minor exceptions, mainly associated with the contrasts between take up and turn down, and defer and acept full-time, we can see that there is virtually no difference between these co-efficients and the equivalent ones for the model without preference level dummies (Table 4:4). It thus appears that preference level does not mediate in any significant way the net differences in rejecting and deferring associated with differences between types of institutions.

Finally, the data of Table 4:4 reveal the extent to which the type of offering institution mediates the effects of the ascribed and achieved variables of our basic model. To what extent, for example, was the higher rate of turning down of tertiary places by girls in 1979–1980 caused by the fact that they might have received proportionately more offers from a particular type of institution (for example, a metropolitan teachers' college)? A comparison of the metric co-efficients of Model 5 with those of Model 1 shows that these mediating effects are scattered and diffuse. Most mediating effects are associated with the contrasts between decline and accept full-time and decline and defer. Thus it seems that the type of institution was most likely to mediate relationships with an applicant's decision to decline the VUAC offer. We will focus our discussion on this particular enrolment decision.

Table 4:6 presents a summary of the data from Column B of Table 4:4 compared with the equivalent column of Table 3:7 (column D). We find that the effects of sex, home location, and HSC score are all reduced by about one third in the elaborated model, and the effect of the contrast between non-Catholic independent school and state high school is reduced by about one half. That is, the type of institution making the offer partly explains the **higher** net proportion of females who declined offers and the **lower** net proportions of metropolitan applicants, those from non-Catholic independent schools and those with higher HSC scores who declined.

We calculated simple cross-tabulations between enrolment decisions and the type of institution making the offer, and these two variables with the applicants' sex, home location, school type and aggregate HSC scores. They show consistently strong relation-

TABLE 4:7
MODEL 6: TERTIARY COURSE TYPE EFFECTS ON ENROLMENT DECISIONS

Independent Variables	Dependent Variables				
	A Turn down VS Take up	B Decline VS Accept Full-time	C Defer VS Accept Full-time	D Accept Part-time VS Full-time	E Defer VS Decline
	N=13695 R=0.26	N=11561 R=0.30	N=10917 R=0.20	N=9365 R=0.28	N=4336 R=0.33
Sex (1=Female, 0=Male)	0.043	0.026	0.027	−0.000	0.007
Age	−0.015	0.011	−0.006	0.032	−0.012
Home location (1=Metropolitan, 0=Rural)	−0.010	−0.088	−0.069	0.003	0.001
School type (VS State High School)					
Catholic Independent	0.047	0.044	0.018	0.001	−0.039
Non-Catholic Independent	−0.008	−0.025	0.007	−0.009	0.043
Other	0.018	0.141	0.110	0.053	0.140
HSC Course type (1=Science, 0=other)	−0.082	−0.050	−0.036	−0.001	0.014
HSC Score	−0.0017	−0.0016	−0.0004	0.0003	0.0021
Type of Course offered (VS Medicine)					
Humanities	0.047	0.029	0.096	0.068	−0.119
Commerce	0.037	0.089	0.035	0.117	−0.283
Law	−0.022	−0.050	0.016	0.015	0.003
Kindergarten Teaching	0.059	0.077	0.038	0.018	−0.278
Primary Teaching	0.126	0.158	0.095	0.024	−0.262
Secondary Teaching	0.087	0.060	0.089	0.028	−0.191
Physical Education	−0.155	−0.054	−0.118	0.009	−0.579
Social & Welfare Studies	0.084	0.115	0.101	0.052	−0.186
Paramedical Studies	0.001	−0.004	0.018	0.013	−0.174
Science	0.036	−0.047	0.086	0.020	0.037
Applied Science	0.075	0.136	−0.043	0.056	−0.473
Computer Studies	0.186	0.237	0.059	0.030	−0.396
Engineering	0.021	0.055	−0.016	0.024	−0.364
Architecture & Building	0.000	0.031	−0.038	0.021	−0.431
Dentistry & Veterinary Science	−0.000	−0.008	−0.001	0.004	−0.090
Agricultural Science & Forestry	0.127	0.045	0.131	0.015	−0.090
Perf. & Creative Arts	−0.046	0.106	−0.070	0.018	−0.424

ships. These gross relationships suggest that applicants offered places in universities were much less likely to decline their offer than others, and were also most likely to have attended a non-Catholic independent school. Along with those offered places in metropolitan CAEs they were also likely to be male and to have a home address in the Melbourne metropolitan area. The mediating effects of type of institution on the relationships in our basic model are therefore most likely to be due to these associations with the probability of receiving a **university** offer and the much lower rate of declining of university offers. Thus, given that we have placed our variables in the correct causal ordering, the data suggest that receipt of an offer from a university compared with any other institution explains some of the advantages of being male, living in metropolitan Melbourne, attending a non-Catholic independent school, and achieving a high HSC aggregate score. Again, however, we must be circumspect in making inferences of this kind. Another possibility is that there are common unspecified causes of some of these mediated and mediating variables. The most likely is that parental social-status is a common correlate of attending a non-Catholic independent school, gaining a higher aggregate HSC score, applying for a place in a university, and accepting the place when offered.

The Type of Tertiary Course

In order to investigate the direct and mediating effects of the type of course offered to the VUAC applicant, we have used a classification of college and university courses designed for the STEP project in Victoria.[3] There are 18 undergraduate course types in this classification, some exclusively university courses (eg. Medicine, Dentistry and Veterinary science, Law), some exclusively college courses (eg Applied science, Computer studies, Kindergarten teaching) and some offered by both colleges and universities. In forming 17 dummy variables to represent the range of courses we (rather arbitrarily) contrasted each in turn to Medicine. The metric co-efficients for five equations which regress each contrast among the enrolment decisions on the variables of our basic model plus the dummy variables for course type are shown in Table 4:7.

Adding information on the type of tertiary course offered to the VUAC applicant brought about minor increases only in the multiple correlation co-efficient for most models, however, there are many relatively large direct effects. Perhaps the easiest way to describe these complex effects is to pick out those course types which have clear positive and negative relationships with the general decision contrast between turn down and take up an offer, and follow these courses through the other contrasts. The nature of our statistical method required that each course be contrasted against a control; in this case Medicine. We can, however, rank order the courses in terms of the size of their effect by assuming that Medicine has a co-efficient of zero.

Working through the co-efficients of Column A we might roughly group into three, those courses in which the probability of turning down the VUAC offer was greater than for Medicine. Courses where the percentage point difference in the rate of turning down was over 10 were Computer studies, Agricultural science and Forestry, and Primary teaching. Those where the percentage point difference ranged between 5 and 10 included Secondary teaching, Social and Welfare studies, Applied science and Kindergarten teaching. Those where the difference ranged between 2 and 5 were Humanities, Commerce, Science and Engineering. In addition, Physical education, and to a lesser extent Performing and Creative arts, and Law showed rates of turning down as against taking up the VUAC offer which were lower than Medicine.

Following these courses through to the more specific contrasts among enrolment decisions we can see, for example, that Computer studies courses seem to be characterised by a high rate of declining as against accepting full-time whereas Agricultural science and Forestry is characterised by a relatively high rate of deferral. We have no general explana-

tion for these effects, but we understand that they are associated with local course arrangements and methods of data recording.

Primary teaching, Secondary teaching, Social and Welfare studies and Kindergarten teaching are all associated with moderately high rates of both declining and deferring in relation to Medicine. It is possible that some of this effect is due to the recently publicity about employment difficulties for teachers but, of course, it would be necessary to have access to a time-series of cross-sectional data to verify this explanation. Applied science, on the other hand, is characterised by a relatively high rate of declining and a low rate of deferral. Again, local course arrangement may be responsible for these differential effects. Finally, while the patterns of co-efficients are sometimes complex, Humanities and Science courses both appear to be associated with a relatively high rate of deferring; Engineering and Commerce with relatively high rates of declining.

Among the three courses which showed lower rates of turning down the VUAC offer than Medicine, the patterns for Physical education and Performing and Creative arts are particularly complex. Physical education shows both the lowest rate of declining as against accepting full-time and the lowest rate of deferring as against accepting full-time, but also the highest probability that an applicant will have declined rather than deferred (suggesting the deferral is not an option for these courses). Performing and Creative arts, on the other hand, shows a relatively high rate of declining, a low rate of deferring, and also a high probability that an applicant will have declined rather than deferred. Again, local course arrangements, possibly a combination of interviewing and discouragement of deferral, are likely to be responsible for these effects.

The data for the contrast between accept part-time as against accept full-time probably reflect the availability of part-time study in the various academic fields. Thus, those most likely to enrol part-time rather than full-time were offered places in Commerce, Humanities, Applied science and Social and Welfare studies whereas those least likely to enrol part-time were offered places in Medicine, Dentistry and Veterinary science and Physical education.

Finally, we turn to a more detailed examination of the contrast between defer and decline. The co-efficients in column E of Table 4:7 show the direct relationships between the courses offered and this contrast. There are some very strong effects here which we have alluded to previously. They probably reflect the extent to which particular courses or groups of courses enable or encourage deferment rather more than the applicant's choice of declining or deferring where there was an opportunity to defer. Thus, in contrast to declining and other things being equal, deferring was low in Physical education, Applied science, Architecture and Building, and Performing and Creative arts. It was relatively high in Science, Law, Medicine, Dentistry and Veterinary science, and Agricultural science and Forestry. It is worth noting that those courses in which deferring was high (relative to declining) were all exclusively university courses. We cannot tell from our data, however, whether these direct effects represent a difference in policy towards deferment by universities compared with colleges, or whether they reflect a tendency for applicants to 'hang-on' to places offered by the (generally) more highly competitive courses in universities until a final decision to enrol or decline a place is made.

Comparing the co-efficients from Table 3:7 and Table 4:7, we calculated the role of course type in mediating the effects of the variables in our basic model. There are some strong effects associated with the applicants' sex and type of HSC course. The type of tertiary course offered explains about 20% of the higher proportion of females than males who turned down as against took up their VUAC offers, somewhat over 40% of the higher proportion of females compared with males who deferred their offers as against enrolled full-time. The type of course offered also explains all of the weak relationship between sex and part-time enrolment, and 70% of the increased proportion of females who deferred as against declined places outright. It is possible that the strong tendency to defer places in

both primary and secondary teaching in 1979–80 accounts for these mediating effects but we have no way of being certain of this from the analyses we are describing.

The tendency for the type of tertiary course offered to mediate a fair proportion of the relationship between HSC course type and enrolment decisions is expected. The mediating effects are probably due to the similarity between courses taken at HSC and at tertiary level because of the consistent academic interests of students and the prerequisite requirements of a number of courses. They are unlikely to carry any further significance.

Finally, tertiary course type mediates about 30% of the effect of attendance at a non-Catholic independent school on declining of places (against enrolling full-time) and similarly, 20% of the effect of HSC score. There is possibly a tendency for those in non-Catholic independent schools and those anticipating higher HSC scores to apply more frequently than others for the high status professions of Medicine, Dentistry, Veterinary Science and Law; and the low rates of declining of these courses may underlie these mediating effects.

A Further Analysis of Mediated Effects

In the final section of Chapter 3 we presented an analysis of the direct and indirect effects in our basic model of transition. Throughout the present chapter we have also described informally the mediating effects of the sets of VUAC variables we added to the basic model. In order to present these additional mediating effects more formally, we have extended the analysis of Chapter 3 to include the three characteristics of the offer made to the VUAC applicant. We have arranged these characteristics in the hierarchical sequence of preference level first, followed by institution type and, finally, course type. This sequence seems to be a convenient one for ruling out alternative explanations for particular mediated effects. It should be noted, however, that the hierarchical ordering means that the mediating effects of preference level are assessed first; that the mediating effects of institution type are assessed **net** of preference level; and that the mediating effets of course type are assessed **net** of both preference level and institution type.[4]

Table 4:8 shows the data for an assessment of direct and indirect effects of the predetermined variables on the two-way decision as mediated by the applicant's HSC course and score (considered together), the preference level of the offer and the type of institution and course offered. Again, as the direct and indirect effects of the applicant's age are minor and fluctating, we focus our attention on the applicant's sex, home location, school type, HSC course and HSC score.

In Chapter 2, we estimated that approximately 35% of the total effect of sex on the two way decision was mediated by the applicant's HSC course and aggregate score. Data in the first row of Table 4:8 show that a further 12% is mediated by the kind of institution making the offer. It is likely that this mediating effect is, at least partly, associated with the higher numbers of girls offered courses in teacher education and the high rates of deferring and declining offers from these courses. Preference level does not appear to play a role in this particular causal sequence.

The third row of Table 4:8 shows that much of the effect of home location on the two way decision (85%) is still direct. There are minor mediating effects of HSC course and score (about 9%) and the type of institution making the offer (about 11%). Thus only a small proportion of the negative effect of a rural home location overlaps with the effects of the type of institution on enrolment decisions. It therefore seems that our observation that declining and deferring are high for offers made by the regional CAEs can explain very little of the relative reluctance of country applicants to accept their VUAC offers.

The co-efficients for the specific contrasts between school types suggest that only small proportions of the effect of Catholic and non-Catholic independent schools on enrolment decisions are mediated by the nature of the offer. It is worth noting, however,

TABLE 4:8

DIRECT AND INDIRECT EFFECTS IN A MODEL OF TRANSITION INCLUDING ASPECTS OF THE OFFER MADE TO STUDENTS

Independent variables	Total effect	Combined indirect effect via HSC course type and HSC score	Indirect effect via preference level	Indirect effect via institution type	Indirect effect via course type	Direct effect
Sex	0.082[a]	0.029	0.0000	0.010	0.002	0.041
Age	−0.005	0.010	−0.001	−0.001	0.001	−0.014
Home Location	−0.114	−0.010	0.004	−0.013	0.002	−0.097
School Type (VS State High School)	(0.065)					(0.047)
Catholic Independent	0.038[b]	−0.007	0.008	−0.002	−0.001	0.041
non-Catholic Independent	−0.049	−0.033	0.005	−0.007	−0.004	−0.009
Other	0.002	−0.011	0.003	−0.007	−0.001	0.018
HSC Course	−0.107	−0.019	0.009	−0.012	0.001	−0.084
HSC Score	−0.0019	—	−0.0006	−0.0003	−0.0002	−0.0008

Note: a. The co-efficients presented are in unstandarised form.
b. The slight numeric discrepancies in some rows are due to rounding errors.

that over 80% of the total effect of attending a non-Catholic independent school is mediated by the full set of variables in the model. These mediating effects include HSC achievements (67%), the type of institution making the offer (14%), the type of course offered (9%); and are counteracted a little by the preference level of the offer (–10%). The mediating effects of the Catholic independent school versus state high school contrast counteract each other so that the total effect is in fact slightly weaker than the direct effect. Notably, the relatively higher HSC achievements of Catholic students counteract a little (–20%) the direct effect on enrolment decisions but are in turn counteracted by lower preference levels of their VUAC offers (again 20%).

The mediated effects of HSC course and HSC score are complex and interesting. Approximately, 18% of the total negative effect of taking a non-science course at HSC is mediated through HSC score. A further 11% is mediated through the type of institution offering a place. Preference level is a countervailing influence, however (approximately –8% of the total effect). It thus seems that more HSC science students than non-science students received lower preference offers and that this inclined them to turn down the offer. Specifically, this might be associated with students turning down lower preference offers after being unsuccessful with an application for Medicine, Dentistry, Veterinary Science and the high status paramedical courses.

Finally, almost 60% of the strong effect of HSC score on the two way enrolment decision is mediated by the three characteristics of the offer made. As we have mentioned previously, over 30% of the effect is associated with the preference level of the offer. Further about 16% is associated with the type of institution making the offer and a further 10% (independently) by the type of course offered. The mediating effects of institution and course, independent of preference level, are interesting to note here. Part of this effect might be associated with more relatively low scoring applicants applying for teacher education and similar CAE courses with less certain employment prospects. There will certainly be many competing hypotheses, however, and the mediated effects of HSC attainment on enrolment decisions warrants further attention.

Conclusion

In Chapter 3 we presented a basic model of the process of transition to tertiary education using data from administrative records kept by the VUAC. We attempted to give an overview of the factors which influence a student's self-selection into tertiary study at the final barrier to transition using a parsimonious model, restricted to simplified and readily interpretable contrasts.

In this chapter we have extended the model in two ways. Firstly, we have increased the discrimination of certain variables in the basic model. For instance, we replaced the binary home-location variable contrasting rural and urban home address with a series of fourteen separate contrasts. Likewise, the simple distrinction between Science and non-Science courses in HSC was replaced by contrasts between Science and each of Humanities, Commerce-Social science and a Mixed combination of subjects. Although the specific contrasts in these two independent variables are illuminating in various ways, we would not claim that the additional explanatory power obtained from the more complex versions would compensate for the sacrifice in parsimony were the elaborated indices of home location and HSC course type included in our basic model.

The second way in which we have extended our model is to include several variables that intervene between the predetermined variables and the dependent variable of enrolment decision. These intervening variables all relate to some characteristic of the offer made. The preference level the student gave the course in his or her application, the type of institution making the offer and the type of tertiary course offered all affect the enrolment decisions in two ways. First, these variables have direct effects on the decision

taken. Although the extent of the effect varies according to the decision contrast examined, generally they are quite modest in accounting for additional variability in enrolment decisions. However, there are some large effects in percentage-point terms associated with particular contrasts. Secondly, these intervening variables serve to mediate the effects of some of the predetermined variables in ways that are briefly described in the last section of the chapter.

These elaborations of the basic model serve to increase our understanding of the process of transition, even at the cost of rendering the explanation more complex. The elaborations of the predetermined variables highlight the effects of some specific home locations and HSC courses. The intervening variables indicate not only how the student's ultimate decision may be influenced by the type of course and institution offered, but also suggest some mechanisms through which the influences of the predetermined variables are exerted.

NOTES

1. The regions were recoded from postcodes of home addresses. The grouping of codes for mail sorting purposes was taken as the basis of the coding scheme, and the main place names of each post code used to verify the approximate location. It was not possible exhaustively to examine the boundaries of the post code areas and confirm their distribution among the regions. The regional coding resulting is adequate for our purposes but not error free.

2. A small number of students were classified into two categories by this procedure. These double classifications were resolved, after we inspected each individual combination of subjects, by assigning all those classified as both humanities and commerce to commerce, all those classified as both humanities and science to science, and all those classified as both commerce and science to science. Additionally, there was a small number of students taking fewer than four HSC subjects at their final attempt. These students were regarded as having missing data for HSC course type.

3. We are grateful to Mr Barry Walsh of the Secondary-Tertiary Education Planning Project (STEP) for allowing us to use his classification of Victorian college and university courses.

4. The hierarchical ordering of the three characteristics of the offer made to the student also implies that any mediating effect carried by **overlapping** variation between preference level and institution, and institution and course will be credited to the first variable of the pair. Thus any joint mediating effects of preference level and institution will be credited to preference level and any joint mediating effect of institution and course will be credited to institution.

CHAPTER 5

SOCIO-ECONOMIC STATUS, ETHNICITY AND THE TRANSITION TO TERTIARY STUDY

In Chapters 3 and 4 we developed some models of transition to tertiary education from the data on a population of young Victorians who were offered a place in a college or university for 1980. Although we were eager to exploit to the full the possibilities presented by the VUAC data, our analysis was restricted by the narrow scope of the information available, relating as it did to biographical variables plus information about home location and schooling.

Our analyses of the VUAC data constantly raised questions of the following type:

(i) How far are the effects of variables such as home location and school type simply manifestations of more general underlying social orientations, for example, the socio-economic status of the applicant's family?
(ii) Do the attitudes and expectations of the applicant have effects on the decision taken on the VUAC offer?
(iii) What relationship does the student's own assessment of his academic competence have with the decision?
(iv) How far is the student's decision influenced by other persons such as parents, teachers and peers?

It is to an examination of such questions that we now turn. In the present chapter we shall investigate the effects of the social and ethnic background variables on enrolment decisions, and in the next look into the role of attitudes and expectations.

Before commencing, it should be emphasised that we are about to leave the analysis of the VUAC data which contained information about the entire population of interest. In the next two chapters our discussion will be based on data from a questionnaire administered by mail to a randomly selected sample of about ten per cent of VUAC applicants. These questionnaire data are prone to more error than those from the VUAC file. The main source is sampling error. Even when a sample is drawn at random from a defined population, errors are introduced in estimating population values from those of the sample. Thus occasionally there will be minor discrepancies between figures given previously and those in the following chapters where they replicate for the sample, parts of the analysis reported previously for the total population. Generally, however, the correspondence between the population parameters and the sample estimates is reassuringly close.[1]

In this chapter we elaborate the basic model already discussed so as to include, firstly Socio-economic status (SES) and, later, Ethnicity.[2] However, because of the particular nature of the SES variable, it is necessary to commence by making a minor modification to our model. Previously, for the sake of clarity, we grouped together under the heading 'predetermined variables' the applicant's sex, age, home location and school type. Relative to the other independent variables in that model (HSC course type and HSC score) it is clear that all of these predetermined variables are logically and temporally prior. It might perhaps have been argued that home location, for example, could have some determining influence on school type, but such refinements were felt to be marginal to the discussion of the direct and mediated effects of these particular variables on the decision taken on the VUAC offer.

When Socio-economic status is to be included in the model, however, it appears that school type can no longer be considered as a predetermined variable. Our expectation was, and our analysis later showed, that the SES of parents has a substantial effect on the type of school attended by respondents. We therefore altered the model by shifting the school type variables from the predetermined category, to a position intervening between

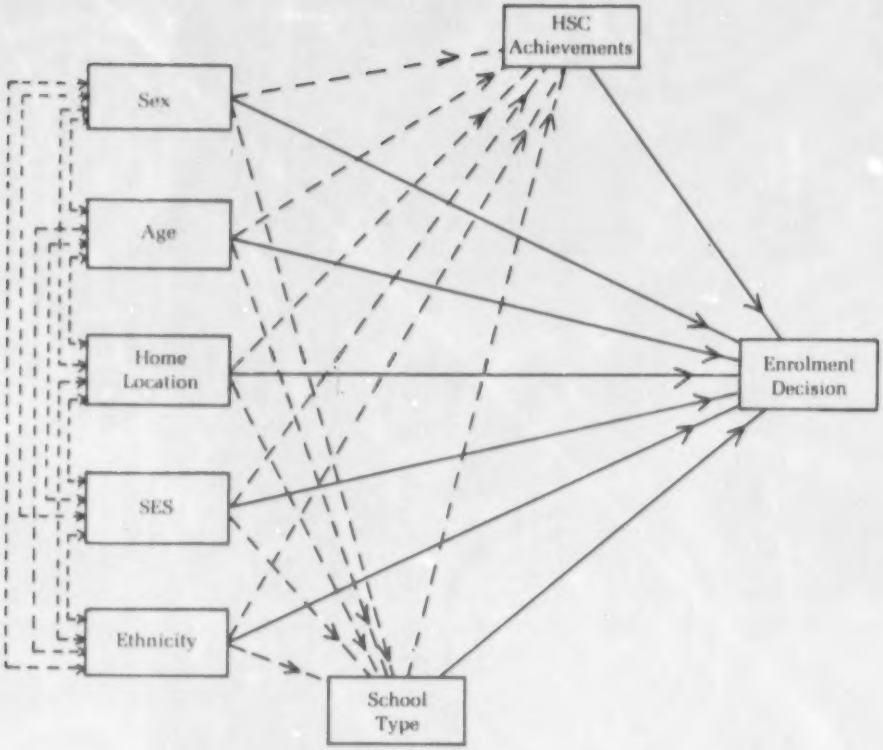

FIGURE 5:1
REVISED MODEL OF TRANSITION TO INCLUDE EFFECTS OF SOCIO-ECONOMIC STATUS AND ETHNICITY

TABLE 5:1

THE GROSS EFFECTS OF SOCIO-ECONOMIC STATUS ON THE TWO-WAY DECISION

Two-way Decision	SES		
	High %	Low %	All %
Take up offer	73.8	64.5	69.3
Turn down offer	26.2	35.5	30.7
Weighted N	505	474	978[a]

Note: a. Discrepancies between the totals in Chapters 5 and 6 are caused by missing data.

the predetermined variables and the other mediating variables of HSC course type and score. Further, in the interests of parsimony, HSC course type and best-four score were aggregated into the single block; 'year 12 achievements'. This slightly revised model is outlined in Figure 5:1.

To introduce the discussion, we temporarily disregard the mediating variables of school type and year 12 achievements, and consider only the total effects of the predetermined variables. We begin by adding Socio-economic status to the model, and then later include the effects of Ethnicity.

Socio-economic Status

Several items on the questionnaire measured aspects of social status. Information was available on father's and mother's occupation and father's and mother's education. These four variables, after some recoding, were subjected to a principal components analysis in order to extract the common variance, and the scores from the first principal component were taken as the index of Socio-economic status.[3] The first principal component explained 59.7% of the total variance in the four variables. The other components derived from the analysis each explained about 18% of the total variance or less, indicating that there was only one source of common variance which was a more powerful explanation than any one of the four individual variables. This result confirmed our **a priori** expectation that the four separate measures of parents' occupation and education were tapping one common dimension. We have labelled this dimension Socio-economic status (SES) throughout the following analysis.

It should be noted that here, and in other cases where scores on a composite scale are computed, the direction of the scale follows as closely as possible the scoring of the constituent variables in the questionnaire. In the case of the Socio-economic status scale, therefore, a high scale value indicates low SES. Thus if our expectations are met and low SES is associated with a high rate of turning down offers, we would expect the effects shown in the tables to be positive since deferring or declining an offer is coded '1' on the dependent variable, and taking up the offer is coded 'zero'.[4]

The simplest way to illustrate the gross effect of Socio-economic status on the two-way decision is to use a crosstabulation of the two variables. As SES is a scale variable, it is necessary for it to be recoded before it can be represented in a crosstabulation. This has been done for Table 5:1 so that approximately half the sample falls into the high SES category and half in the low group. The table shows that whereas more than a quarter (26.2%) of the high SES group turned down their offers, well over one third (35.5%) of the

TABLE 5:2

THE EFFECTS OF SEX, AGE, HOME LOCATION, SOCIO-ECONOMIC STATUS AND ETHNICITY ON THE TWO-WAY ENROLMENT DECISION

Independent Variable	Dependent Variable: Two-way Decision (1 = turn down offer, 0 = take up offer)		
	A with SES and ethnicity only	B with SES and interaction	C with SES-ethnicity
	R = 0.19 N(Weighted) = 952	R = 0.21 N(Weighted) = 952	R = 0.23 N(Weighted) = 952
Sex (1 = female, 0 = male)	0.121[a] (0.13)[b]	0.117 (0.12)	0.118
Age	−0.009 (−0.02)	−0.006 (−0.01)	−0.006
Home Location (1 = metropolitan, 0 = rural)	−0.102 (−0.10)	−0.081 (−0.08)	−0.077
Socio-Economic Status (High Value = Low SES)	0.034 (0.07)	0.046 (0.09)	0.049
Ethnicity (vs 'Australian' Fathers)		(−0.10)[c]	
'English'		−0.021 (−0.01)	0.033
'non-English'		−0.114 (−0.10)	−0.100
SES by Ethnicity Interaction			
SES by 'English'			0.120
SES by 'non-English'			−0.038

Note: a. Underlined co-efficients are at least twice as large as their standard errors.
b. The co-efficients in paretheses are in standard form.
c. This is the 'sheaf' co-efficient for the composite effect of the dummy variables.

students from low SES families did so. Clearly, in these simple bi-variate terms, there appears to be some class differential in access to tertiary education.

The gross effect of Socio-economic status may be expressed as the percentage point difference in the proportions of the two SES groups continuing with higher education. Measured this way, the gross effect of SES is .093 (.355 − .262). That is, 9.3% more low SES than high SES applicants turned down their VUAC offers. This is comparable with other gross effects in the model, but the process of recoding has probably rendered it less reliable. Also, we should anticipate that the net effects of the unrecoded Socio-economic status variable would not be identical to the gross effects because of the influences of other predetermined variables in the model. However, the gross effect is useful in that it gives an indication of the overall level of association.

Another way of presenting the relationship between Socio-economic status and the decision taken on the VUAC offer is to examine the mean SES scale score within each of the categories of the two-way decision. When this is done, the mean SES score among those who took up the offer was −0.048 and among those who turned it down 0.096. A difference of means test gives a 't' value of 2.21, which is significant beyond the 0.05 probability level. There is thus a modest but statistically significant difference between the mean SES levels of those who took up offers and those who turned them down.

Both the crosstabulation and the difference of means test show a modest gross effect of SES on the two-way decision. When we calculate the total effect of SES net of the applicant's sex, age and home location we find also that the effect is quite small. The magnitude of the total effects of the predetermined variables may be compared by examining the standardised regression weights in parenthesis in Column A of Table 5:2. These show that sex and home location have more powerful total causal effects on the decision than does Socio-economic status, although, in comparison with the effect of age, SES is relatively important.

The meaning of the direction of the co-efficients should be recalled. Females were more likely than males to turn down places. As sex is a dummy variable, the unstandardised co-efficient of 0.121 in Column A of Table 5:2 suggests that female students were, on average, about 12 percentage points more likely than males to turn down places. Likewise, the negative unstandardised co-efficient for home location shows that students with metropolitan home addresses were about 10 percentage points less likely to turn down offers than were rural students. In the case of Socio-economic status, which is not a dummy variable, it is less simple to give such a clear intuitive interpretation of the unstandardised co-efficient. It may be construed, however, that for every unit of change in the SES scale as we pass from high to low status there is a 3.4 percentage point increase in the proportion of applicants turning down offers. The range of the SES scale is a little over 4 units, therefore a student from the highest SES family in our sample was, other things being equal, about 14 percentage points more likely to turn down the VUAC offer than one from the lowest SES family. Again, it must be recalled that all these effects are net of the influence of the other predetermined variables. For instance, we know from an earlier discussion that females were more likely than males to come from the rural areas, but net of this relationship, females were still more likely to turn down offers.

Ethnic Background

The next variable we added to the model was the ethnic background of the applicant's family, based on the country of birth of the father. We classified applicants, according to their father's birthplace, into three groups as follows:

'Australian'	Father born in Australia
'English'	Father born in English-speaking overseas country: Great Britain, Ireland, Canada, USA, New Zealand, South Africa
'Non-English'	Father born in non-English-speaking overseas country.

TABLE 5:3

DISTRIBUTION OF THE SAMPLE IN THE CATEGORIES OF ETHNIC BACKGROUND

	Weighted N	%
'Australian' (Father born in Australia)	680	66.3
'English' (Father born in other English language country)	100	9.7
'Non-English' (Father born in non-English speaking country)	238	23.2
Missing information	8	0.8
Total	1026	100.0

The terms 'English', 'non-English' and 'Australian' will be used within single quotation marks with these meanings.

We chose this form of representation of ethnic background in order to capture mainly the cultural influence of the family on the student's enrolment decision. In their study of transition from school to work, Williams *et al* (1980) distinguish between the 'migrancy' and 'language' effects of ethnic background. We believe that both aspects may have potent influences on educational achievements and decisions. The effect of 'migrancy' is likely to be more pervasive, however, in that it should reflect the effect of perceptions of the functions of higher education in both the 'old' and host countries, as well as the effect of the student's competence in the language of the host country. In order to capture these differences in perception, in addition to differences which may be attributable to language, we have distinguished 'other English-speaking' immigrant families from Australian families as well as distinguishing 'non-English speaking' families. Also, we believe that these cultural differences are as important for those Australian born students whose parents were born overseas as they are for those students who were not born in Australia. We have therefore attempted to estimate the 'migrancy' of the applicant's family by coding the birthplaces of the fathers rather than those of the applicants themselves. The distribution of applicants in the three categories of Ethnic background is shown in Table 5:3.

Table 5:4 shows the simple bivariate association of migrancy and the decision taken on the offer. 'English' students were 4.4 percentage points, and 'non-English' students 11.9 percentage points less likely to turn down the offer than were 'Australian' applicants. This suggests a strong relationship between an immigrant background and the decision to go on to tertiary education. The tendency is particularly marked in the case of applicants from 'non-English' families. When we turn to the multivariate analysis, we find that the results resemble these gross effects, but of course do not exactly replicate them.

TABLE 5:4

THE GROSS EFFECTS OF MIGRANCY ON THE TWO-WAY DECISION

Two-way Decision	Migrancy			
	'Australian' %	'English' %	'Non-English' %	Total %
Take up offer	65.4	69.8	77.3	68.6
Turn down offer	34.6	30.2	22.7	31.4
Weighted N	680	100	238	1018

The total effects in the model with ethnicity added can be seen in Column B of Table 5:2. Again, both the standarised and the unstandardised regression weights are given; the standardised weights should be used for comparing the relative importance of the influences of variables within the one model.

The 'sheaf' co-efficient for Ethnicity shows that that this is the second most powerful direct effect in the model after the applicant's sex. By far the more important contrast is that between applicants from 'non-English' families compared with 'Australian' families. Other things being equal, those from 'non-English' families were over 11 percentage points less likely to turn down their offers from the VUAC. Those from 'English' families were, as estimated from this model, about 2 percentage points less likely to turn down their offers.

Particularly interesting are the results for home location and Socio-economic status which have changed noticeably from the values they took when Ethnicity was excluded from the model (see Column A). The effect of home location has been reduced from −0.102 to −0.081. In contrast the effect of SES has increased from 0.034 to 0.046. Using the interpretation outlined above, we conclude that the metropolitan students are now eight, rather than ten, percentage points less likely to turn down offers. In other words, part of the advantage apparently enjoyed by urban students is due to this group including higher proportions of applicants from immigrant families who have a greater inclination to continue with tertiary education. A similar concentration of immigrant students among those of lower socio-economic status had previously masked some of the effect of the SES variable.

Another way of illustrating the impact on the model of adding the Ethnic variables is to use the standardised weights to assess the relative importance of the variables now in the model. In the model without Ethnicity, Socio-economic status had one of the lowest standardised weights (0.07). In the model including Ethnicity its standardised weight has increased to 0.09, showing that it has now a stronger effect than home location (−0.08). Again we conclude that the greater concentration of immigrant students, who were less likely to turn down offers, among the lower SES groups partially masked the effect of SES when Ethnicity was excluded from the model. Conversely, the greater concentration of immigrant students in urban areas exaggerated the effect of home location when the Ethnic variables were omitted.

The Interaction between Socio-economic Status and Ethnicity

As we are particularly interested in the joint effects of class and ethnicity, it may be valuable to represent their relationships with the two-way decision graphically. The purpose of the figures presented here is to elucidate the text. There has been no attempt to draw the figures to scale, and the magnitude of all estimates should be taken from the tables rather than the diagrams. Because it appears, from at least one methodological investigation of the technique that we will use in this section (Allison, 1977) that standardised regression co-efficients are unsuitable for interpretation of interactions between categorical and continuous variables, we use unstandardised co-efficients in the following discussion.

Figure 5:2, corresponding to the unstandardised co-efficients in Column A of Table 5:2, represents the relationship between turning down the offer and Socio-economic status, net of the other predetermined variables. As noted in the previous section, in this model SES has a relatively weak relationship with the two-way decision.

Figure 5:3 illustrates some of the data in Column B of Table 5:2. Here we see three parallel lines indicating that the model assumes that the relationship between Socio-economic status and the decision to continue to tertiary education is constant for all

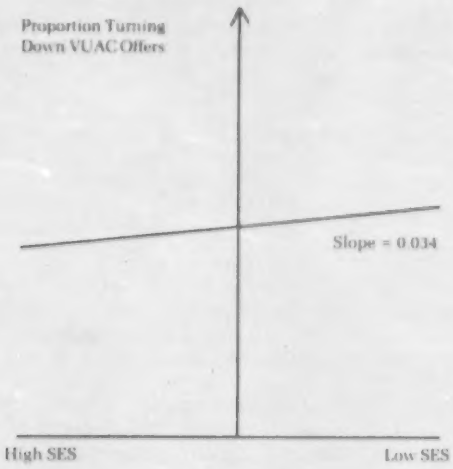

FIGURE 5:2
THE EFFECT OF SES ON THE TWO-WAY DECISION ESTIMATED FROM A MODEL EXCLUDING ETHNICITY

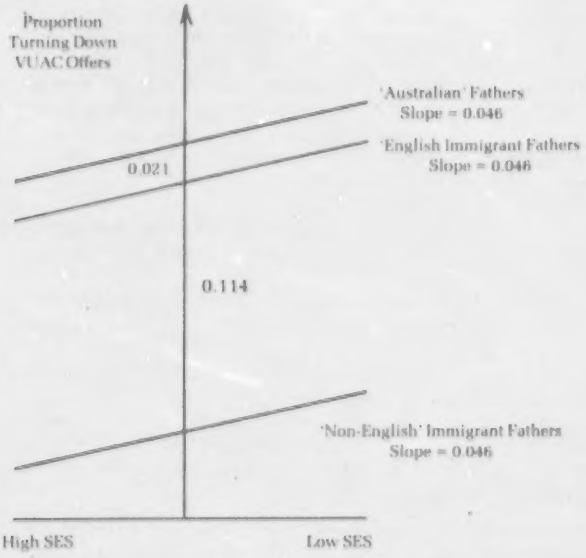

FIGURE 5:3
THE EFFECT OF SES ON THE TWO-WAY DECISION FOR THREE ETHNIC GROUPS ASSUMING NO INTERACTION

categories of Ethnic background. This model adds some clarity to the interpretation. The effect of class is larger than in the previous model, and the three slopes suggest that, other things being equal, the offspring of 'English' migrant fathers were slightly less likely than 'Australians' to refuse places, and that the children of 'non-English' immigrants were significantly less likely to refuse places offered than were students from a non-migrant background.

There are some grounds, however, for doubting the assumption implicit in Figure 5:3, that the relationship between Socio-economic status and turning down offers is the same across all categories of Ethnic background. In Table 5:5 the proportions taking up offers among high and low SES groups are shown within each category of Ethnicity. The high and low SES categories have been formed using the Socio-economic status scale so that approximately half the total sample falls into each. Table 5:5 shows that the association between SES and turning down offers is strongest among the students with 'English' fathers and weakest among those whose fathers have immigrated from 'non-English' speaking countries. It should be noted that these data represent gross relationships between the three variables. No attempt has been made to control for the other variables in the model, and the SES scale has been recoded into two categories only. For those reasons we should not expect to see the pattern of the table exactly replicated in the regression model.

The figures in Table 5:5 do suggest, however, that there is a large interaction between Socio-economic status, Ethnicity and propensity to turn down offers. By 'interaction' we imply, in this context, that the relationship between SES and enrolment decision varies significantly among the various ethnic categories. In the case of 'English' applicants the association is strong, among the 'Australian' group it is weaker and it is weakest among the 'non-English' immigrant group. There is a 4.4 percentage point difference between the proportions of low and high status 'non-English' students turning down the offer (23.3% and 18.9% respectively). The equivalent difference among 'Australian' students is 10.8 percentage points (40.0 — 29.2) and for 'English' applicants it is nearly 28 (48.3-20.4).

The regression procedure used so far in the analysis can be modified to test for relationships of this kind. It will provide information on the direction and extent of the interaction and also an indication of whether or not it is statistically significant, but, as noted earlier, only the unstandardised co-efficients can be given a meaningful interpretation. Unstandardised weights from an analysis incorporating interaction terms may be found in Column C of Table 5:2. With these terms included in the analysis, we can interpret the co-efficients as follows:

(i) the regression co-efficient for Socio-economic status shows the total effect of SES on two-way decision in the base category of 'Australian' applicants
(ii) the regression co-efficient for the SES by 'English' interaction shows the difference between the effect of SES for 'English' and that for 'Australian' applicants
(iii) the regression co-efficient for the SES by 'non-English' interaction shows the difference between the effect of SES for 'non-English' and that for 'Australian' applicants.

For example, the unstandardised regression weight for SES is 0.05 (from the 4th line in column C, Table 5:2). This is our estimate of the total effect of SES on two-way decision among the group of 'Australian' students only. The SES by 'English' interaction term is 0.12. This means that the effect of SES on the two-way decision is 0.12 units greater in the case of 'English' students than it is for 'Australian' students. To get the total effect for 'English' students, the interaction term 0.12 and the effect for 'Australians' must be summed, giving a total effect for 'English' students of 0.17. This indicates that there is a very powerful effect of SES on the two-way decision among 'English' students.

The interaction term for 'non-English' students is negative, showing that the relationship between SES and two-way decision is weaker in the case of the 'non-English'

TABLE 5:5

GROSS RELATIONSHIP BETWEEN SOCIO-ECONOMIC STATUS AND TWO-WAY DECISION WITHIN EACH ETHNIC GROUP

Two-way decision	Ethnic and SES Groups						All
	'Australian'		'English'		'Non-English'		
	High SES	Low SES	High SES	Low SES	High SES	Low SES	
	%	%	%	%	%	%	%
Take up offer	70.8	60.0	79.6	51.7	81.1	76.7	69.3
Turn down offer	29.2	40.0	20.4	48.3	18.9	23.3	30.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Weighted N	350	301	68	31	80	142	972

students than it is for 'Australians'. The effect in the case of 'Australians' is 0.05 and for 'non-English' students the interaction term is −0.04. Summing these two effects, we find the total effect of SES on decision among 'non-English' students is 0.01, much less than the strength of the relationship among 'Australian' students.

These relationships are represented by the sketch graph in Figure 5:4. Here the effect of SES on the two-way decision within each Ethnic group is represented by the slope of the graph lines. The effect of SES is, of course, net of the effects of the other predetermined variables. There are three lines on the diagram, one for each Ethnic group. It will be seen that the line for the 'English' group is steeply sloped, showing that the effect of SES on decision is very strong among these students. Among 'Australians' the slope is less marked and in the case of 'non-English' students it is almost flat, denoting that there is very little effect of SES on decision among applicants from this Ethnic group.

The co-efficients for the Ethnic dummy variables show the shifts in the intercept of the regression line on the vertical axis of the graph. The line for 'English' students cuts the vertical axis of the graph 0.03 units above the intercept for the 'Australian' base group[5]. The effect for the 'non-English' dummy is −0.10, indcating that the intercept for these students is 0.10 units lower than for non-immigrants.

It will be noted that the conclusions about the relationships between SES and two-way decision among the three Ethnic groups are precisely the same as those drawn from the examination of the crosstabulations reported in Table 5:4. There are two advantages of the regression procedure however. First, we have estimates of the interactions net of the effects of other predetermiend variables in the model. Secondly, we can use the increase in the explanatory power of the model, measured by the multiple correlation

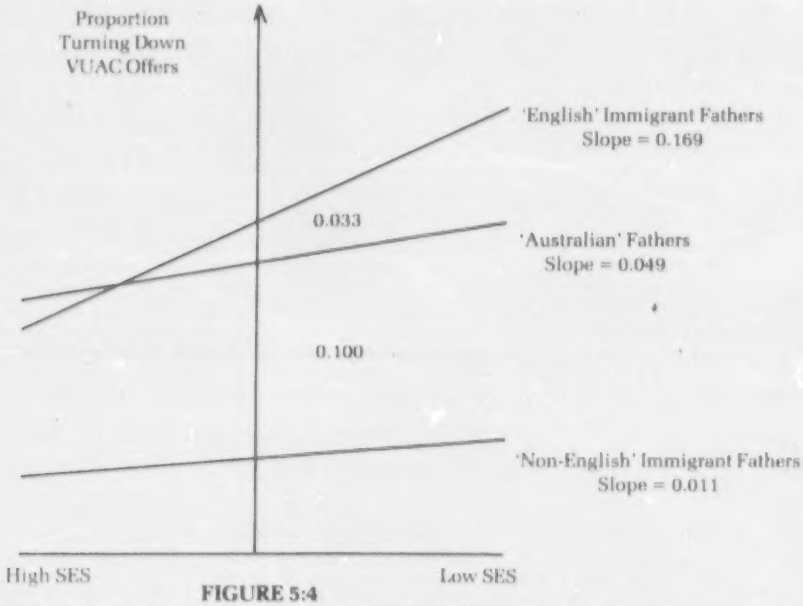

FIGURE 5:4

THE EFFECT OF SES ON THE TWO-WAY DECISION FOR THREE ETHNIC GROUPS SHOWING THE SIGNIFICANT SES-ETHNICITY INTERACTION

co-efficient, to estimate whether or not the model with interactions is a significant improvement over that omitting them. When this test is applied to the present data we find the increase has an F-ratio of 3.25 with 2 and 952 degrees of freedom which denotes that the interactions do add significantly to the explanatory power of the model.[6]

Several conclusions follow from this investigation. Overall, Socio-economic status appears to have a small but significant effect on the decision taken on the VUAC offer. When we assumed that there was no interaction between SES and Ethnicity, children of fathers born in overseas English-speaking countries appeared to have slightly lower rates of turning down offers. However, Socio-economic status had a very strong effect on the decision taken by students from this group. Offspring of non-English speaking migrant fathers, on the other hand, showed much lower rates of turning down the offer than did non-migrants and the analysis indicated that Socio-economic status had very little effect on the decisions of this group.

These findings are consistent with previous research which has suggested that the children of immigrants from continental Europe are better represented in higher education than would be predicted from their representation in the general population. Thus, for example, one conclusion drawn by Anderson *et al* from their study of the social composition of university and college student groups was:

> " . . . there seems to be no doubt that the families with Australian born parents are under-represented in both the universities and metropolitan colleges."
> (Anderson, Fensham, Boven and Powell, 1978, p93)

The study by Anderson *et al* differs from ours in many respects. In particular, it deals with institutions across Australia but reports only gross effects. One investigation which used a multivariate model similar to ours was that of Williams *et al* (1980). They reported a greater tendency for students born in overseas non-English speaking countries to stay on at school. Our findings suggest that this persistence with education carries over to tertiary level for these migrant students. Again differences between the studies, particularly in the definition of the ethnic groups, render such comparisons tentative.

We feel that our findings on Socio-economic status and Ethnicity valuably could be carried further. In particular, it would be valuable to extend our investigation in order to see how far the differences we have found among the Ethnic groups represent a lower level of selectivity on the part of the 'non-English' group when deciding whether or not to accept a VUAC offer. Is it the case that 'Australian' students have a higher rate of turning down offers because they are more selective in the type of offer they will accept? Or do 'non-English' students avoid applying, in the first place, for highly competitive courses where the chances of receiving a less preferred offer might be greater? Does their high rate of acceptance of offers (and the lack of any SES bias in the likelihood of acceptance) therefore reflect hidden inequalities in access to the high status professions of Medicine and the para-medical sciences, Dentistry, Law and Veterinary Science? To what extent are these aspects mediated by the HSC courses and scores of the various ethnic groups?

The Elaborated Model: Total, Direct and Mediated Effects

We return now to a consideration of the model revised to include Socio-economic status and Ethnicity with, for the present discussion, the addition of the mediating variables school type and year 12 achievements. It will be recalled that the model has also been slightly modified in that the dummy variables for school type, previously treated as predetermined variables, are now placed as mediating variables. Also, the HSC variables, course type and best-four score, have been located together in a subsequent block of mediating influences termed 'year 12 achievements'. For present purposes we have

omitted the interaction effects discussed in the previous section. We can thus return to the use of standardised co-efficients, which enable a comparison of the relative size of the effects.

Table 5.6 shows the total, mediated and direct effects that have been computed from a series of regressions in the manner outlined in Chapter Two. Although the focus of our attention is the effects of Socio-economic status and Ethnicity, we shall briefly consider the effects of the other variables in the model as well.

The strongest total effect among the predetermined variables in the model comes from sex (0.125). About two-thirds of this total effect is directly attributable to sex differences **per se** (0.083). The indirect effect of sex mediated by school type is very small (0.003). In contrast, the effect mediated by year 12 achievements is moderately large (0.039), and makes up nearly one-third of the total effect of sex. The reason is mainly that females were less likely to take science courses at year 12 and science students in general received higher HSC scores and were less likely to turn down offers. However, even net of the effect of course type and school type, females had slightly lower HSC best-four scores.[7] Thus the indirect effects of sex compound the influence of the direct effect to produce a total causal effect of considerable size.

The role of age in the model provides an interesting contrast to sex in that the effects here do not compound, but operate in such a way as to cancel each other out to a large extent. The total effect of age (−0.013) is the weakest among the predetermined variables in the model, and suggests that, overall, older students were slightly less likely to turn down offers. The direct effect of age (−0.048) however, is four times greater than the total effect. In itself, over and above the effects of predetermined and mediating variables, older age inclines students to be far less likely to turn down the VUAC offer. However, there is a strong countervailing effect which very nearly negates this greater propensity of older students to take up offers. This contervailing effect comes through year 12 achievements. Analyses not reported in detail here show that older students were less likely than younger ones to take Sciences courses for the HSC and consequently obtained lower HSC aggregate scores. Thus the effect of age mediated through year 12 achievements (0.036) cancels out much of the direct effect (−0.048) resulting in a total effect of −0.013. The component mediated through school type is so tiny that we disregard it here.[8]

We conclude our discussion of the effect of age with a note of caution. It is possible that this variable is delineating two related but distinct factors. First, there is a group of 'adult' students, say from 19 to 24 years who, although they do not fit the VUAC definition of mature-age, nevertheless are probably quite distinct from the younger students in terms of family status, employment history and so forth. Secondly, there may be age effects among the 16, 17 and 18 year-olds who make up the bulk of the school population. At this stage we have not undertaken any exploration of these questions, but until potential problems with the age variable have been examined, we feel that any conclusions associated with an applicant's age should be regarded as tentative.

The effects of home location may be quickly dealt with. It is one of the more powerful total effects in the model (−0.081). The fact that its direct effect (−0.065) accounts for nearly four-fifths of its total effect suggests that it is principally a rural home address in itself that has the main influence on the applicant's enrolment decision. There is some effect mediated via year 12 achievements, and the role of school type is negligible.

Socio-economic status, when Ethnicity is included in the model, provides a moderately powerful explanation of the decision on the VUAC offer. The method of decomposition of effects shown in Table 5:6 is particularly appropriate here, as the relationship between SES and the intervening educational variables is often cited as a problematic one. The analysis shows that, of the total effect of SES (0.094), about 70 per cent (0.065) is direct. That is to say, over and above the type of school attended, the type of HSC course taken and the results obtained, and the other predetermined variables in the model, there

TABLE 5:6

DIRECT AND INDIRECT EFFECTS IN THE MODEL INCLUDING SOCIO-ECONOMIC STATUS AND ETHNICITY[a]

Independent Variable	A Total Effect	B Indirect Effect Mediated by School Type	C Indirect Effect Mediated by Course and Score	D Direct effect
Sex (1 = female, 0 = male)	0.125[b]	0.003	0.039	0.083
Age	−0.013	−0.001	0.036	−0.048
Home Location (1 = metropolitan, 0 = rural)	−0.081	−0.001	−0.016	−0.065
Socio-Economic Status (High Value = Low SES)	0.094	0.015	0.014	0.065
Ethnicity (vs 'Australian' Fathers)	(−0.103)[c]	—	—	(−0.102)
'English'	−0.013	−0.003	0.013	−0.023
'non-English'	−0.104	−0.002	0.001	−0.104
School Type (vs State High School)	(0.054)	—	—	(0.046)
Catholic Independent	0.030	—	−0.012	0.042
Non-Catholic Independent	−0.034	—	−0.035	0.001
Other	0.017	—	−0.009	0.026
HSC Course Type (1 = Science, 0 = other)				−0.109
HSC Score				−0.204

Note: a. The dependent variable is the two-way decision coded 1 = turn down offer, 0 = take up offer.
b. All co-efficients are in standardised form.
c. The sheaf co-efficients for the composite effects of the dummy variables are shown in parentheses.

is a large net effect of SES on the decision to enter tertiary education. We can only speculate at this stage on the mechanism by which social location affects a decision on continuing with further education. In the next chapter, however, we examine the mediating influences of career and academic expectations as well as the role of financial considerations.

The propensity of lower SES students directly to turn down offers is compounded by the indirect effects mediated by school type (0.015, about 16% of the total effect) and year 12 achievements (0.014, about 15% of the total effect). We principally attribute the role of school type to the fact that the lower SES students were far less likely to attend non-Catholic independent schools. Our results show that the advantage to independent school pupils comes from their having higher HSC scores, part of which effect, in turn, comes about as a result of their being a little more likely to take HSC science courses. The indirect effect of SES mediated by year 12 achievements, however, suggests that even net of the effects passing through school type, the lower SES students were less likely to take science courses, less likely to get good results, and were thus more likely to turn down the VUAC offer. While only about three-tenths of the total effect of SES is mediated via school type and year 12 achievements, this should not be interpreted as detracting from the key role of these educational variables in mediating the SES effect. For example, among all the predetermined variables mediated by school type, SES is by far the strongest.

When compared with most other direct causes of the two-way decision, Socio-economic status has a similar modest effect. The most powerful direct effect, however, comes from HSC score. Similar general findings are reported by McDonnell and Beswick (1977) for a sample of largely rural students. Their dependent variable was the student's intention regarding enrolment in tertiary education, rather than the decision actually taken on the offer of a place. While their study principally focusses on the effects of environmental variables such as general levels of ability and SES within the student's school, as a corollary they show that the effect of family Socio-economic status on educational plans is about one third the size of the effect of performance in the final year examination. Using a model differing in many respects from that of McDonnell and Beswick, we find similarly that the direct effect of SES is about one third the magnitude of that of HSC score, the effects being 0.065 and −0.204 respectively. Thus, regardless of the admittedly substantial difference between the models, both agree that the effects of examination results are considerably larger than those of Socio-economic status.

We turn, finally, to a discussion of Ethnicity. We have, in Table 5:6, two dummy variables representing contrasts between children of fathers born in overseas English-speaking countries ('English') and the offspring of non-migrant Australian fathers on the one hand, and a contrast between students with fathers born in overseas non-English speaking countries ('non-English') and non-migrants on the other. We present the 'sheaf' co-efficients for the total and direct effects. These represent the combination of the two contrasts and give an indication of the power of Ethnicity as an overall explanation.

The total effect of a migrant background is, as noted earlier, to make the applicant less likely to turn down the offer. The 'sheaf' co-efficient shows a total effect of −0.103 which indicates that Ethnicity is an influential factor overall. The total effects of the individual contrasts, shown by the co-efficients for the dummy variables, suggest that, although there is little difference between 'English' and 'Australian' students (−0.013), there is a powerful total effect (−0.104) in the case of the 'non-English' group.

The direct effect in each case is similar to the total effect. The sheaf co-efficient for the total effect is −0.103, and for the direct effect it is −0.102. The co-efficients for direct and total effects are similarly close in the case of the 'non-English' – 'Australian' contrast, and not quite so similar in the case of 'English' students, although here the total effect is, in itself, very small. The close approximation of the total and direct effects suggests that the mediated effects via school type and year 12 achievements are minimal. It appears that

factors either prior to or outside the educational experiences of migrant students are the source of their commitment to tertiary education. The direct component could perhaps be due to the influence of the family, or result from some aspect of the migrant sub-culture. This matter will be investigated further in the next chapter when we come to examine the impact of the 'Social-psychological' variables on the model.

As with SES, in contrast with the effects of HSC score, Ethnicity appears to be a modest influence on enrolment decisions. But the policy significance of causal effects is not necessarily proportional to their magnitudes. In as much as greater access to tertiary education may reduce any social disadvantage suffered by migrant groups, our analysis suggests that the decision taken on the VUAC offer may be working to enhance the prospects of students from migrant backgrounds. The nature of the institutions and courses that these students are gaining access to, however, is problematic and warrants further study.

Notes

1. As mentioned in Chapter 1, particular categories of applicants have been intentionally oversampled, and weights must be applied to restore the distribution of certain known characteristics among the sample to that of the total population. TOP students, for example were oversampled but, as in the analysis of the survey data reported here we deal only with HSC students, this oversampling is of no concern.

   Also, HSC students were sampled so that there were approximately equal numbers from each category of decision outcome. In the parent population, however, the categories are unequal, (e.g. only 2% accepted places part-time, and 66% accepted full-time) so the distribution of decisions in the sample must be weighted to correspond. This weighting does have effects on the estimates of standard errors and it appears likely that the standard errors are greater, by a small margin, than those used in the tables in Chapters 5 and and 6. The proportions of the population and the sample in the various categories of decision outcome, and the weights applied, are set out in the following table.

Weights for HSC Students

Decision Category	Population (not TOP)		Sample	Weight	Weighted N (Sample N x Weight)	
	N	%	N		N	%
Accept full-time	9320	66.37	268	2.5335	679	66.37
Accept part-time	305	2.17	199	.11166	22	2.17
Defer	1829	13.03	297	.44865	133	13.03
Decline	2588	18.43	259	.72780	189	18.43
Total	14042	100.0	1023		1023	100.0

2. In this and the following chapters we shall adopt the convention of naming derived variables, such as Socio-economic status, with upper case letters. This will assist to distinguish the construct from the variable measuring that construct.

3. The education variables were recoded so that 'some university or similar college study' and 'completed other tertiary or professional qualification . . .' were grouped into a single code, as were the classifications 'Technical Trade Certificate . . .' and Completed form 5 or 6.'

   The occupational variables were coded according to the six-point classification discussed by Broom **et al**. (1976). This six-point classification is a reduction from a sixteen category occupational classification which is in turn based on a 107 point classification described in Broom **et al**. (1965). In coding occupations in the survey, we began with the 1961 census codes, and subsequently recoded these to the Broom 107 point scale, the 16 point scale and finally the 6 point scale. The Australian Bureau of statistics information paper, **Occupation Classification Extract** (Australian Bureau of Statistics 1977) was used to resolve the few coding problems that arose with the use of the outdated 1961 census codes.

4. As the Socio-economic status scale is comprised of principal component scores and as these are standardised, the scale should have a mean of zero and a variance of one. In fact the mean of the scale is − .005 and the variance .886. The maximum value is 2.539 and the minimum is −1.723. These slight deviations from the expected mean and variance are due to our method of treating missing data in a limited number of cases. In the fifty-four cases where data were missing on more than one of the four original variables, SES was regarded as missing. However, if data were missing on only one of the four constituent variables, the single missing value was replaced by the mean value for that variable. It was felt desirable to take this step as many respondents had one parent not in the workforce. To exclude these cases from the SES scale could have introduced bias. For instance, all those respondents with one parent deceased or whose mothers were housewives would have been excluded from the analysis. The substitution of the mean value in such cases has the effect of reducing the variance of the resulting scale.

5. The observant reader will have noted that the line for 'English' students is below that for 'Australians' in Figure 5:3, and mainly above it in Figure 5:4. A glance at Table 5:5 will show why this is so. There are fewer 'English' migrants in the lower SES category and more in the higher SES category. Thus the more numerous high SES 'English' respondents have the overall effect of making the mean number turning down places lower than among the 'Australians'. However, the rate of turning down places is higher among the low status 'English' than among the low status 'Australians' and so the regression lines for the model with interaction terms included indicates this.

6. We acknowledge here that some difficulty may arise regarding the appropriateness of using the F test and the R square measure, due to the binary nature of the dependent variable. Wonnacott and Wonnacott (1970) argue that, for the estimation of regression co-efficients the assumption of normality of the dependent variable is not required. However, it appears that this assumption may be required for the F-test.

   As a further footnote to this section, it should be recalled that the effect of the Home location variable was altered when SES was incorporated into the model. This led us to test for interactions between Home location and Socio-economic status. No significant interactions were found.

7. This finding from our survey of those offered places was not replicated in a later analysis of the population of all applicants were, net of home location, school type and course type, females scored 2.61 best-four marks higher than males.

8. It will be recalled that a similar pattern, in which the direct effects of age were partly offset by mediated effects, resulting in a small total effect, was shown in Table 3:2. Although the pattern is similar, the magnitudes of the co-efficients do differ, due partly to sampling error, and partly to different sets of predetermined variables in the two models.

CHAPTER 6

SOCIAL-PSYCHOLOGICAL VARIABLES

Our analysis, so far, has dealt with explanations of the decision taken on the VUAC offer in terms of ascribed or predetermined attributes of the applicants such as sex, age, home location, Socio-economic status and Ethnicity. We have also discussed the direct and mediating roles of school type and HSC course type and score, which were regarded as achievement variables. One feature shared by all these variables is that they refer to objective characteristics of the respondent, characteristics that can be readily measured by 'face sheet' questionnaire items and often confirmed by observation.

In this chapter we move away from the discussion of the effects of these objective attributes and achievements and focus instead on the role of the students' own perceptions and expectations in relation to their decisions on the VUAC offer. Most of the questions we asked about perceptions and expectations lack the objective correlates that are typical of the ascribed and achieved variables. The scales we used are, by their nature, subjective. For example, on a scale of convenience of location it is possible that what one respondent regarded as a 'very inconvenient' location will have seemed to another only 'slightly inconvenient', although both may have faced transport problems which were, objectively, of equal magnitude.

Following the conceptual framework provided by Sewell and Hauser (1975) we grouped a number of diverse variables together under the generic name 'social-psychological' variables. Our review of the literature and examination of other studies in the field led us to hypothesise that several perceptions and expectations should be significant. These are:

(i) the career benefits accruing from accepting the course offered, as opposed to the career opportunities available on finishing school;
(ii) the financial costs of undertaking a course of tertiary education as measured by the anticipation of financial problems during the course and the nature of the expected sources of financial support;
(iii) the respondent's perceptions of the influence of significant other persons in his immediate social environment; parents, teachers and peers;
(iv) expectations about the academic aspects of the course offered; anticipated workloads, expected intellectual difficulties, intrinsic interest of the study and so forth;
(v) expectations about other aspects of tertiary education; attractiveness of the student lifestyle, convenience of location and so forth.

To capture the applicant's perceptions of these factors we used a number of five-point scales (Questions 11 to 24) and asked the respondent to indicate approximately where he stood on each matter by marking one of five adjoining boxes. Our piloting suggested that the box format was the simplest and most familiar. Two follow-up questions were asked about each scale. They were: whether the factor was a strong or weak influence on the enrolment decision, and whether it had made the respondent more or less likely to accept the offer. The question dealing with the expected sources of finance was treated differently. In Question 25 respondents were asked to indicate for each of a number of possible sources of finance, whether it was the only, a major or a minor source of finance, or whether no finance at all was expected from that source.

Because the number of pieces of information resulting from these questions is so large, over twenty replies for each respondent, some means of data reduction was necessary. To reduce the data to manageable proportions, a factor analysis of all social-psychological variables was first conducted to investigate the underlying structure of the group of items. By and large, the structure we found corresponded to that anticipated, although some constructs were defined by fewer items than we had expected. Having delineated an overall pattern in the items, a series of four separate principal component analyses were

conducted, one for each group of items which the initial exploratory factor analysis suggested should be combined. The first principal component scores were then taken as the scale for Career benefits, Costs, Influence of significant others and Academic expectations. The raw scales are used in the case of the single questions which are not included in the principal component scores. The final outcome of this procedure is shown in Table 6:1.

We turn now to a discussion of each question in the battery of social-psychological items, and show how each contributes to the factor analysis. We also discuss here the respondent's reports of how strong or weak each factor was in influencing his enrolment decision and the direction of this perceived influence. These questions are, however, disregarded in the subsequent regression analyses. As far as the direction of the perceived influence is concerned, our analysis shows that, with one exception, all items worked in the anticipated direction for all but a handful of the respondents. We had anticipated that, for example, a number of idiosyncratic students might reply that strong parental discouragement had made them more likely to accept the place offered; or conversely, that strong encouragement had made them less likely to do so. In fact the numbers falling into these atypical categories are generally so small that we have disregarded them.

The exceptional item was Question 15 where a significant number of respondents claimed that the heavy demands of study made them more likely to accept the VUAC offer. We guess that many of these respondents might have wanted to say that they accepted that heavy study demands were very much part of tertiary education, but that this expectation did not in any way deter them from accepting the VUAC offer. Our relatively brief questionnaire unfortunately was not designed to capture the subtlety of anticipations and motivations of this kind.

Career Benefits

One of the more self-evident orientations to tertiary education is to regard it, in strictly instrumental terms, as a preparation for a particular career which might offer many advantages that other, more easily accessible jobs, might not. Several items were included in the questionnaire to tap specific aspects of this instrumental orientation. Applicants were asked about the extent to which the advantages of income, interest, prestige and opportunities were perceived as resulting from taking a course of tertiary education. Certainly most VUAC applicants were aware of the potential career benefits conferred by tertiary education. Table 6:2 shows the distributions of responses for each of the social-psychological questionnaire items. We attach only a general interpretation to these five-point scales as it appears that they measure both magnitude and intensity. We avoid a literal interpretation of the meanings of positions on the scales by simply describing the actual distribution of responses in relation to the two extreme positions, using appropriately weighted data for HSC students only.

On Question 17, 'How many job opportunities . . . would be open to you if you finished the course . . .', 29% ticked the box at the 'many opportunities' end of the scale, and a further 29% ticked the adjacent box. From this we conclude that over half the sample felt that more job opportunities would result if they completed a tertiary course. Similarly, well over half the respondents placed themselves in the two positions at the 'much higher esteem' end of the scale in answer to Question 20 on the esteem attached to a job taken at the conclusion of the course offered. Approximately three out of every five ticked the two boxes at the 'much higher income' end of the scale when asked about their anticipated income in ten years' time if they completed the course offered. When asked whether or not they expected to get a more interesting job as a result of taking the course, three-quarters put themselves in one of the two places at the 'much more interesting' end of the scale.

With regard to the perceived strength of these influences on enrolment decisions,

TABLE 6:1

COMPOSITE AND SINGLE-ITEM SCALES FOR THE ANALYSIS OF SOCIAL-PSYCHOLOGICAL EFFECTS

Scale	Item	Loading on the first principal component and co-efficients for calculating factor scores (in brackets)	Percentage of total variance explained by the first principal component
1. Career benefits	Q. 17 How many **job opportunities** did you believe would be open to you if you finished the course offered by VUAC?	.70 (.30)	58.9%
	Q. 18 Did you think that, in ten years' time you would have a **higher income** if you completed the course offered by VUAC, or would it make no difference?	.82 (.35)	
	Q. 19 Did you think that you would get a **more interesting job** if you completed the course offered by VUAC, or would it make no difference?	.73 (.31)	
	Q. 20 Did you think that you would have a **job held in higher esteem** if you completed the course offered by VUAC, or did you think it would make no difference?	.81 (.34)	
2. Costs	Q. 24 How large a problem did you expect **financial support** would be during your course?	.63 (.37)	56.6%
	Q. 25a **TEAS** expected to be a source of finance during the course	.80 (.47)	
	Q. 25b **Support from parents** expected to be a source of finance during the course	−.81 (−.48)	
3. Influence of significant others	Q. 21 At the time you took your decision on the VUAC offer how many of your **friends** were going on to college or university?	.29 (.24)	40.3%
	Q. 22 In general, did your **parents** (or guardians) encourage or discourage you from takng the course?	.72 (.59)	
	Q. 23 In general, did your **teachers** encourage or discourage you from taking the course?	.79 (.64)	
4. Academic expectations	Q. 12 How **interesting** did you think the course offered would be?	.80 (.63)	63.5%
	Q. 14 How did you feel about your **prospects of success** in the course offered to you?	.80 (.63)	
Single item scales	Q. 11 How **conveniently located** was the college or university to you?		
	Q. 13 How attractive did you think the **social aspects** of student life would be?		
	Q. 15 How heavy did you think the **demands of studying** would be in the course offered?		
	Q. 16 How many **job opportunities** were open to you on leaving **secondary school**?		
	Q. 25c **Regular part-time job** expected to be a source of finance during the course		

almost 72% of the respondents indicated that job interest (Question 19) had a strong influence on their decision, and nearly four out of five indicated that it was either a strong or weak influence (see Table 6:3). The remaining informants had indicated that this factor was of no influence on their decisions. Only one other item was cited more frequently as a factor which influenced the students's enrolment decision. The number of job opportunities opened up by a course of tertiary education (Question 17) was cited as a strong

influence by 67% of respondents, and again almost four out of five mentioned it as either a strong or a weak influence on their decision. Question 18 asked whether accepting the VUAC offer would lead to a job with a higher income in ten years' time. The time scale of ten years was used to encourage the respondent to think in the long term, and to overcome the fact that in some professional careers, eg. law, the short-term financial benefits may be meagre. Question 20 dealt with the social prestige of the careers following from tertiary study. In comparison with job interest and opportunities, the benefits of increased income and esteem were held as important influences by fewer respondents; 54% cited future income as a strong or weak factor in their decision, and about 48% gave esteem as a consideration.

Question 16, on the number of job oportunities available to the informant **on leaving school**, illustrates that the perception of post-schooling employment is not a bright one. Only 10% of respondents placed themselves at the 'many opportunities' end of the scale, and 16% placed themselves in the adjacent box. The 'no opportunities at all' box was ticked by 22% of informants. About 55% mention this factor as either a strong or weak influence on their decision. The exploratory factor analysis of all the social-psychological variables showed that, contrary to our expectation, the number of job opportunities on leaving school was not part of the overall career orientation. We had anticipated that students might make a type of 'trade off' decision between jobs available to them at the conclusion of their schooling and those that might become available as a result of tertiary education. Job opportunities on leaving school were important, the analysis suggests, but their significance is independent of students' opinions about career opportunities arising from tertiary education. As the scale measuring job opportunities on leaving school did not load on any factor in the exploratory analysis, we have treated it subsequently as a separate single item.

The indicator of Career benefits used throughout this chapter is therefore the first principal component score from a simple principal components analysis of Questions 17 to 20: job opportunities if the course were finished, interest in, prestige of and income from jobs available as a result of completion of the course offered. Later in this chapter we shall discuss in detail the regression analysis including all the social-psychological variables. Here we point out that in Table 6:4, **Career benefits has the largest effect of any variable in the model (0.293) and it stands out well ahead of year 12 achievements that have been shown to be important in previous models.**

Likewise, in the same table, the effect of Job opportunities on leaving school (−0.119) is large, and as the exploratory factor analysis suggested, independent of the effects of Career orientations. This suggests that students who feel that there are many employment opportunities open to them as they finish HSC, irrespective of their opinions about the career benefits of tertiary education, are likely to turn down the places offered to them through the VUAC.

Financial Costs

We anticipated that the financial costs of tertiary education would be an important factor in determining whether or not students accepted places offered to them. We included in the questionnaire one item in the box format of the other perception questions (Question 24) and some more factual questions on anticipated sources of financial support (Question 25, parts a to g).

Question 24, on how large a problem financial support was expected to be, gave interesting results. Nearly half of the sample (46%) claimed that the matter was of no influence on their decision. A modest proportion (17%) of the total claimed it was a weak influence, and 37% classified it as a strong influence. These results may come as a surprise given the amount of discussion about the problems of financial support for tertiary students. However, our findings suggest that although, overall, only a little over one-third

TABLE 6:2

DISTRIBUTION OF RESPONSES TO THE SOCIAL-PSYCHOLOGIGAL QUESTIONNAIRE ITEMS AND TO THE QUESTION ON EXPECTED SOURCES OF FINANCIAL SUPPORT (PERCENTAGES OF RESPONDENTS TO EACH ITEM)

Q. 11 How **conveniently located** was the university or college offered to you?						
	Very convenient	20.2%	21.7%	18.2%	19.9%	20.0%	Not at all convenient
Q. 12 How **interesting** did you think the course offered would be?						
	Very interesting	41.5%	39.5%	14.2%	3.2%	1.6%	Not at all interesting
Q. 13 How attractive did you think the **social aspects** of student life would be?						
	Very attractive	27.2%	32.6%	27.7%	8.6%	3.9%	Not at all attractive
Q. 14 How did you feel about your **prospects of success** in the course offered to you?						
	Very confident of success	24.3%	44.3%	24.3%	4.8%	2.4%	Not at all confident of success
Q. 15 How heavy did you think the **demands of studying** would be in the course offered?						
	Very heavy	21.4%	43.6%	22.0%	10.7%	2.4%	Not at all heavy
Q. 16 How many **job opportunities** were open to you on **leaving secondary school?**						
	Many opportunities	9.7%	15.9%	26.1%	26.0%	22.3%	No opportunities at all
Q. 17 How many **job opportunities** did you believe would be open to you if you finished the course offered by VUAC?						
	Many opportunities	28.8%	28.8%	19.8%	18.7%	4.0%	No opportunities at all
Q. 18 Did you think that, in ten years' time you would have a **higher income** if you completed the course offered by VUAC, or would it make no difference?						
	Much higher income	35.5%	26.9%	12.6%	7.6%	17.3%	No difference
Q. 19 Did you think that you would get a **more interesting job** if you completed the course offered by VUAC, or would it make no difference?						
	Much more interesting	51.1%	23.7%	9.8%	2.8%	12.5%	No difference

TABLE 6:2 (Cont.)

Q. 20 Did you think that you would have a job held in **higher esteem** if you completed the course offered by VUAC, or did you think it would make no difference?

Much higher esteem	30.2%	27.3%	15.8%	8.4%	18.2%	No difference

Q. 21 At the time you took the decision on the VUAC offer, how many of your **friends** were going on to college or university?

All friends going	12.6%	36.1%	22.4%	21.9%	6.9%	No friends going

Q. 22 In general, did your **parents** (or guardians) encourage or discourage you from taking the course?

Strongly encouraged	36.9%	24.4%	31.2%	5.0%	2.4%	Strongly discouraged

Q. 23 In general, did your **teachers** encourage or discourage you from taking the course?

Strongly encouraged	26.3%	31.9%	38.0%	2.7%	1.1%	Strongly discouraged

Q.24 How large a problem did you expect **financial support** would be during your course?

Very large problem	27.8%	23.0%	18.5%	17.7%	13.0%	No problem at all

Q. 25 When you were considering whether or not to accept the course offered to you, what did you expect would be your **main source of finance** during the course?
(tick one box in each row)

	Only source of finance %	Major source of finance %	Minor source of finance %	No finance expected from this source %
Tertiary Education Assistance Scheme (TEAS)	5.1	20.4	13.3	61.2
Support from parents	17.5	41.3	24.0	17.2
Regular full-time job	2.1	1.5	1.1	95.4
Regular part-time job	2.0	15.2	19.5	63.3
Casual work	0.6	8.2	40.2	51.0
Wife or husband's income	0.0	0.1	0.2	99.7
Other source of income	0.9	5.8	4.9	88.5

TABLE 6:3

DISTRIBUTION OF QUESTIONNAIRE RESPONDENTS ACCORDING TO THEIR PERCEPTIONS OF THE STRENGTH WITH WHICH EACH 'SOCIAL-PSYCHOLOGICAL' FACTOR INFLUENCED THEIR ENROLMENT DECISIONS

	Item	Extent of Influence		
		None %	Weak %	Strong %
Q. 12	How **interesting** did you think the course offered would be?	18.3	7.4	74.4
Q. 19	Did you think that you would get a **more interesting job** if you completed the course offered by VUAC, or would it make no difference?	21.4	7.1	71.6
Q. 17	How many **job opportunities** did you believe would be open to you if you finished the course offered by VUAC?	23.4	9.2	67.4
Q. 14	How did you feel about your **prospects of success** in the course offered to you?	36.5	10.6	52.8
Q. 16	How many **job opportunities** were open to you on **leaving secondary school?**	45.7	10.9	43.9
Q. 22	In general, did your **parents** (or guardians) encourage or discourage you from taking the course?	45.9	13.5	40.7
Q. 18	Did you think that, in ten years' time, you would have a **higher income** if you completed the course offered by VUAC, or would it make no difference?	46.0	13.6	40.4
Q. 24	How large a **problem** did you expect **financial support** would be during your course?	46.2	17.1	36.8
Q. 11	How **conveniently located** was the college or university to you?	46.9	18.8	34.2
Q. 13	How attractive did you think the **social aspects** of student life would be?	51.5	16.5	32.0
Q. 20	Did you think that you would have a job held in **higher esteem** if you completed the course offered by VUAC, or did you think it would make no difference?	52.3	12.0	35.8
Q. 15	How heavy did you think the **demands of studying** would be in the course offered?	58.7	19.5	21.8
Q. 23	In general, did your **teachers** encourage or discourage you from taking the course?	64.1	14.7	21.2
Q. 21	At the time you took your decision on the VUAC offer, how many of your **friends** were going on to college or university?	69.1	15.5	15.4

of the students expressed the view that finance was a strong influence on their enrolment decision, there is a significant group for whom financial questions were indeed crucial ones. Among the 28% of the sample who indicated that financial support would be a very large problem, nearly seven out of ten (69%) gave this as a strong influence on their decision not to accept the offer made through the VUAC.

Our exploratory factor analysis of all the social-psychological variables showed that only three items (financial support from TEAS, financial support from parents and anticipated financial problems) had substantial common factor variance which appeared to be due to anticipated costs. About 25% of informants reported that TEAS was expected to be a main or the only source of finance, while nearly 59% had anticipated parents as a main or the only source of finance (Table 6:2).

Following the procedure described for constructing the Career benefits scale, we then took these three variables alone and extracted the first principal component. The loadings were positive on Questions 24 and 25a (how large a problem finance was expected to be and support from TEAS) and negative in the case of Question 25b (support from parents). These component loadings suggest that those students who anticipated that they would be dependent on TEAS were more likely to anticipate financial problems, while those dependent on parents were less likely to expect such difficulties. Scores from the first principal component from this analysis are used as the scale labelled 'Costs' in the regression analysis reported in Table 6:4.

The regression analysis shows that the direct effect of Costs on the two-way decision is relatively large (−0.104). Thus financial expectations appear to have a substantial independent effect on students' enrolment decisions. When interpreting this result the reader should keep in mind the nature of the multivariate analysis. The effect we report assumes that 'other things' in the model are equal. Thus the effect is net of the indicators of social and economic disadvantage that precede it in the model, such as home location, Ethnicity, Socio-economic status and the type of school attended. Were these variables to be omitted from the model, it is probable that a large portion of their explanatory power would devolve onto considerations of the costs of accepting the offer. The cost factor reported here is also considered above and beyond effects of the other social-psychological variables.

The effect of Costs shown in Table 6:4 is negative. The Costs scale is coded so that a high value indicates few financial problems; and turning down the VUAC offer is coded 1. **Thus, those anticipating large financial problems and those least dependent on parents and most dependent on TEAS were considerably more likely to turn down offers of tertiary places made through the VUAC.**

Turning to the question of 'regular part-time work as a source of finance' (Question 25d), we can note in Table 6:2 that only 2% anticipated that part-time work would be the only source of finance, 15% expected it to be a major source, almost 20% a minor source and 63% expected no support at all from regular part-time work. The part-time employment variable does show a modest negative effect in Table 6:4 (−0.077). This suggests that an expectation of regular part-time work as the only, or as a major, source of finance is associated with turning down the offer made through the VUAC. As this variable did not load with the other cost components in the exploratory factor analysis of all the social-psychological variables, and further, as it has an independent effect in the regression analysis reported in Table 6:4, we conclude that the effect of the perceived necessity to take regular part-time work on enrolment decisions is fairly independent of the more general effects of economic costs.

The Influence of Others

From Table 6:2 it will be seen that, when asked about encouragement from parents and teachers to proceed to tertiary education, more than half the respondents placed

themselves in the two boxes at the 'strongly encouraged' end of the scale. About 41% claimed that parental encouragement was a strong influence whereas only 21% felt that the encouragement of teachers was similarly strong. This is an indication of the greater salience of parents in the decision-making process, at least as far as the subjective feelings of the students are concerned.

The extensive literature on socialization stresses the unique role of parental influence in shaping many social orientations. The long period over which it is exerted, its primacy in the formative years and its great significance as a mediator of nearly all other influences in early socialization are some of the reasons for its importance. In spite of the uniqueness of parental influence in early socialization, however, it is likely that it is reinforced (but sometimes opposed) by the influence of teachers and peers during adolescence. We thus believed it was appropriate to examine the extent to which students perceived the influence of teachers and peers as going along with the influence of parents, and initially, to investigate the effect of this more general construct of 'Significant others' on enrolment decisions.

Our pilot testing suggested that the form of the question on the influence of peers was a sensitive matter. In some cases we felt that the implication of peer pressure was resented, and so a slightly different form of question was used. This was a factual question about the number of peers continuing with further education. About 49% of applicants ticked one of the two boxes at the 'all friends going on' end of the scale when asked how many were proceeding to college or university. This item was the least frequently reported as having any influence on enrolment decisions. Only 15.5% said they were weakly, and 15.4% strongly, influenced by the number of their peers continuing.

The exploratory factor analysis showed that the three variables measuring the perceived influence of parents, teachers and peers shared sufficient variance to define a clear common factor. We therefore followed our usual procedure and included the three 'Significant others' variables in an analysis from which the first principal component was extracted and used to form a composite scale. However, as shown in Table 6:1, the relative proportion of common variance to the total variance of the contributing items is small in the case of this scale.

The use of the 'Significant others' scale in the regression reported in Table 6:4 shows that it has a large net effect of 0.102 on the two-way decision. **Thus among those strongly encouraged by parents or teachers, and those with many friends going on, rates of taking up offers were higher than average.**

Finally, it is worth noting that the influence of parental encouragement, although loading on a general 'effect of significant others' factor in the factor analysis, was also found to be associated with the perception of Career benefits. This suggests that parental encouragement may be related to an instrumental orientation to tertiary education.

Academic Expectations

When the questionnaire was developed, five items were included among the social-psychological variables relating to academic expectations and attitudes to the course and institution offered. These were:

(i) Question 11, convenience of location;
(ii) Question 12, interest of the course offered;
(iii) Question 13, attractiveness of social aspects of student life;
(iv) Question 14, prospects of success in the course;
(v) Question 15, how heavy demands of studying expected to be.

Of these five, Questions 12, 14 and 15 focussed on the specifically academic aspects of the course offered and it was anticipated that they might be closely related and thus define a general dimension of 'academic expectations'. The exploratory factor analysis of all the

social-psychological variables, however, showed that only two of the three items identified the factor satisfactorily. They were Question 12 on interest in the course and Question 14 on feelings about prospects of success.

When asked how interesting they expected the course to be, over 80% ticked one of the two boxes at the 'very interesting' end of the scale. Over 74% gave this as a strong (7% as a weak) influence on their decision. Thus, evaluated subjectively, interest in the course is the most influential of all the social-psychological factors (Table 6:2). About 69% placed themselves in one of the two positions at the end of the scale showing that they felt confident of success in the course. This factor was perceived by most respondents to be a very strong influence on their decision on the VUAC offer: 53% rated it a strong, and 11% a weak influence. Our analysis shows that both those who felt very confident and those who felt not at all confident reported this to be a strong influence.

The two variables, interest and confidence, were put into a separate principal components analysis. The resulting first principal component explained 63.5% of the variance of the two variables, and the component scores are used as the scale of 'Academic expectations'. Intuitively, it appears to be interpretable as a commitment to the uniquely academic aspects of the experience of tertiary education. The fact that expected heaviness of demands of study did not share common variance with the other two variables does not imply that it is less powerful as an explanation of enrolment decisions. Rather it suggests that feelings about the likely heaviness of the demands of study are not necessarily related to interest in the course and feelings about prospects of success.

The effect of Academic expectations is moderately large in determining the decision on the VUAC offer. In Table 6:4 the effect is reported as 0.084, net of all the other variables in the model. **This suggests that, over and above school achievement, for example, Academic expectations provide a moderately powerful explanation of the two-way decision.**

Question 15 asked respondents to recall how heavy they had expected the demands of study to be at the time of their decision on the VUAC offer. Nearly two thirds marked the two boxes at the 'very heavy' end of the scale, but comparatively few felt that this consideration was of much influence on their decision. About one in five felt it was a strong, and one in five a weak, influence. It will be recalled that this is one variable where the direction of influence is not uniform. Almost 13% of those who ticked one of the two boxes at the 'very heavy' end of the scale claimed this factor made them more likely to accept the offer. Conversely, over 9% of those in the two positions at the 'not very heavy' end of the scale stated that this made them less likely to accept. For those who answered the question thinking only of the duration of the course, light demands of study have self-evident attractions. For those who approached this question from a longer-term perspective, it could be that a course entailing heavy study demands would be of higher ultimate value, either in terms of career or because of intrinsic intellectual satisfactions. This variable showed an unanticipatedly large effect in the regression model reported in Table 6:4 (−0.135). However, for the reasons to be given shortly, we feel this large effect should be interpreted with caution.

Question 13 on the attractiveness of the social aspects of tertiary study elicited replies which suggested that a large majority of informants expected the social aspects of student life to be attractive. Nearly 60% located themselves in the one of the two positions at the 'very attractive' end of the scale, but only a moderate proportion felt that this was a strong influence on their decision (32%). Other analyses, not reported here, suggest that there is some association between age and this attitude. Generally, the older students were less likely to think of the attractive social aspects of the course offered. The regression model shows that the attitude to the social aspects of student life has a moderately strong effect on the applicant's decision on the VUAC offer (0.097), and further, that this effect is independent of Academic expectations and other views about the course and institution offered.

We feel, however, that there is a possibility that the large effects of the Demands of study and Social aspects variables, in part, might be artefacts of the methodology of the survey. Because the questionaires were administered near the end of the year following the respondents' HSC, it is possible that experiences of tertiary education have contaminated the replies of those who accepted places. The whole group of social-psychological questions is focussed on how the respondent felt at the time the decision was made. On those questions relating to aspects of tertiary education that do not have any counterpart in the school environment, it is possible that a year's experience of further education will lead to some sort of consistent change in evaluation. Thus it could be that taking up the offer of a place has a causal effect on the recall on the expectation, rather than the expectation causing the decision.

The process could possibly work in the following way: the student at the end of his school years anticipates that the work load of tertiary study will be very heavy, on the not unreasonable assumption that the time and effort required will be proportional to the academic level attained. Given perceptions of many qualitative differences between school and university or college, the school student imputes a large quantum leap in academic level from secondary school to tertiary institution and assumes that there will be an equivalently large increase in the amount of study time and effort required.

These expectations of a dramatically heavy workload may be unrealistically high and may be modified by a year's experience of college or university life. That is, at least part of the expectation is borne out of an ignorance that is dissipated by a year's experience of further education. Thus those students who did accept their offers might become, **ex post facto**, more realistic in their evaluation of the effort required and may project this evaluation back onto the recall of the expectations they held at the time of making the decision on the VUAC offer. On the other hand, those who turned down the offer might continue to hold the unrealistic expectations, thus increasing the apparent differences in expectations between the two groups.

A similar process might occur with expectations about the social aspects of student life. The student in transition is faced with exchanging a senior status in a familiar and strongly supportive school environment for the position of freshman in a larger, unknown and very different institution. In answering a question about social life a year after taking the decision, the student who accepted an offer may find it impossible to answer solely in terms of his expectations at the time of the decision, and thus to provide a reply unaffected by his experience of the first year of tertiary education. The applicant who did not accept the offer, however, might reply in terms of the uncertainties he felt on considering an unknown institution.

Thus it is possible that the high co-efficients for Social aspects and Demands of study show the effect of the decision taken and the subsequent year's experience upon the recollection of the attitude, rather than indicating the full causal effect of the attitude upon the decision. We contend, nevertheless, that it is likely that expected demands of study and anticipated attractiveness of the social life would, if measured at a more suitable point in time, show some significant effect on the decision taken on the VUAC offer. We believe, further, that it is unlikely that others in this group of questions are similarly contaminated. Some questions relate to expectations of events well into the future; for example, employment possibilities at the end of a course of study. Other questions focus on factual matters; for example, convenience of location. Still others require an evaluation that could be based as well on the student's experience in secondary education; for example, prospects of success or interest in the course offered. However, we include the above comments as an indication of possible difficulties in interpretation that arise from conducting our fieldwork some ten or eleven months after the time the applicant's decision was taken.

Question 11 asked about the convenience of the location of the institution offered. About 42% of the respondents ticked one of the two boxes at the 'very convenient' end of

the scale, and about 40% marked those at the very inconvenient end. Location was felt to be a strong influence by 34% of the sample. The proportion of those who gave location as a strong influence, however, is higher (63%) among those who felt the institution offered was very conveniently located than it is among those who felt it was not at all conveniently located (34%). This suggests that whereas a convenient location is often felt to be a positive influence for accepting an offer of a college or university place, inconvenience is not, in itself, frequently acknowledged to be a strong negative factor.

Social-Psychological Effects: The Full Model

Having discussed the scales and items from the group of social-psychological effects individually, we now turn to an examination of the model as revised to incorporate all of these variables. The model is identical to that discussed in the previous chapter, except for the addition of the block of social-psychological variables.

The model is presented diagrammatically in Figure 6:1. The causal order of the intervening variables in this model is somewhat problematic. It could be argued, for example, that many of the perceptions we include in the group of social-psychological variables might have causal effects on the type of school attended and on year 12 achievements. The phrasing of the social-psychological questions, however, emphasised the point at which the decision on the VUAC offer was made as the time reference. We therefore believe that placing this group of variables as the last of the intervening sets gives the best representation of the educational experiences of the applicants. Further, this will result, if anything, in conservative estimates of the direct effects of the social-psychological variables.

We deal with the social-psychological variables in two ways; first, by treating them as a single block to provide, principally, an estimate of the overall impact of the perceptions and expectations in mediating the effects of prior variables. Table 6:4 shows the standardised co-efficients from a series of regression analyses, the last of which includes all the social-psychological variables as a single block. Table 6:5 contains essentially the same information, except that the weights from Table 6:4 have been used to compute the mediating (and mediated) effects of all the intervening variables, including the social-psychological variables as a single block.

The second approach to the social-psychological variables is to treat them in a hierarchical order and add them to the regression model one at a time. Because of the large number of variables involved, we have added them in this order: Career benefits, Costs, Significant others, Academic expectations and finally all the others as a single block. This approach means that the effects mediated by the variables added later are net of the effects mediated by those included earlier. For example, the effects we show passing through Significant others are above and beyond the effects mediated by Career benefits and Costs. The results of this analysis are shown in Table 6:6 as standardised mediated effects computed from the appropriate regression co-efficients. In a couple of instances, where it was necessary to do so, we vary the hierarchical ordering and present the results in the text, but generally, in the interests of consistency with the methodology used previously, we adhere to the ordering mentioned above.

We begin by examining the differences in the effects of the predetermined variables when we add the Social-psychological set. This may be done by comparing columns C and D of Table 6:4. The difference between the weights in these columns is, of course, the effect mediated by the Social-psychological variables as a group, shown in column D of Table 6:5.

The effect of Socio-economic status which is mediated by the Social-psychological set is small (−0.008) but interesting in that it runs in the opposite direction to the overall

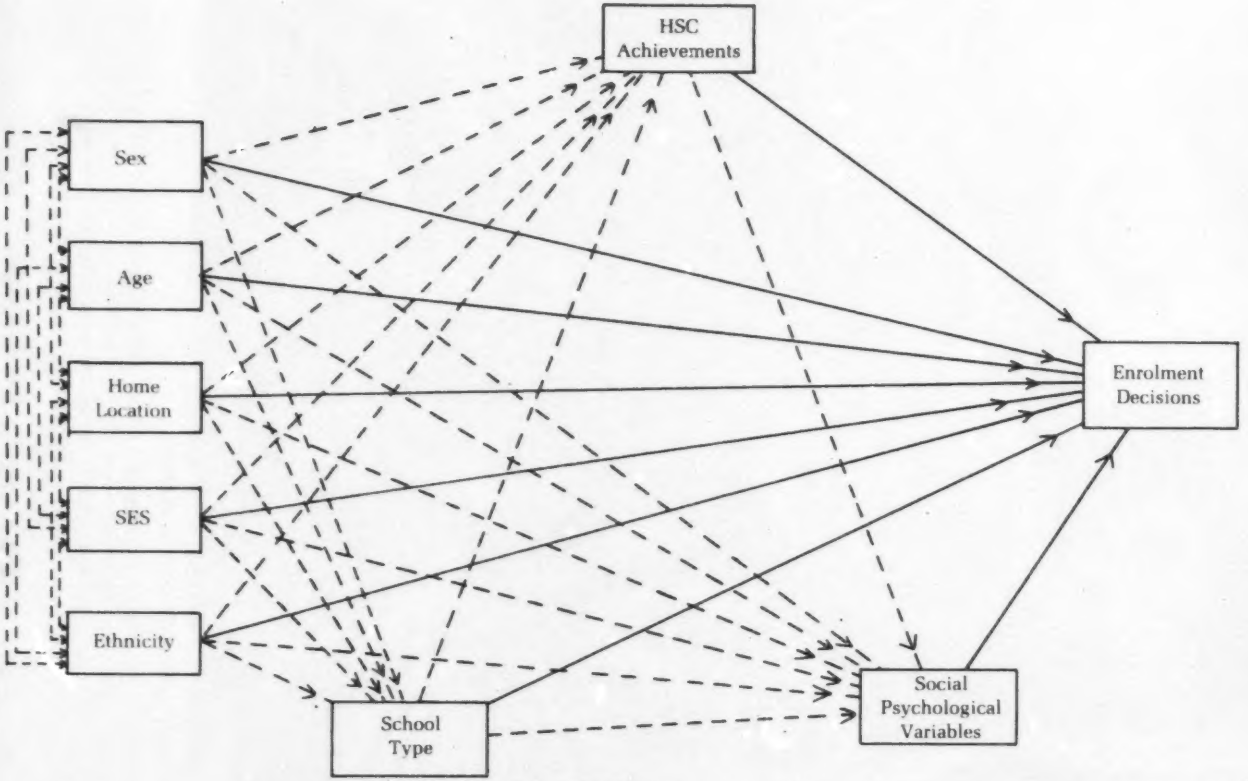

FIGURE 6:1
REVISED MODEL OF TRANSITION TO INCLUDE THE EFFECTS OF SES, ETHNICITY AND THE BLOCK OF SOCIAL PSYCHOLOGICAL VARIABLES

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TABLE 6:4

THE EFFECTS OF SEX, AGE, HOME LOCATION, SES, ETHNICITY, SCHOOL-TYPE, YEAR 12 ACHIEVEMENTS AND THE SOCIAL-PSYCHOLOGICAL VARIABLES ON THE TWO-WAY DECISION

Independent Variables	Dependent Variable – Two-Way Decision			
	A Predetermined variables only	B Plus school type	C Plus HSC achievements	D Plus Social-psychological variables
	R=0.212 weighted N=954[a]	R=0.218 weighted N=954	R=0.326 weighted N=954	R=0.560 weighted N=954
Sex (1=Female, 0=Male)	0.125[b]	0.122	0.083	0.072
Age	−0.013	−0.012	−0.048	−0.091
Home location (1=Metropolitan, 0=Rural)	−0.081	−0.080	−0.065	−0.020
Socio-Economic Status	0.094	0.079	0.065	0.074
Ethnicity (vs 'Australian')	(−0.103)[c]	(−0.101)	(−0.102)	(−0.024)
'English' Fathers	−0.013	−0.010	−0.023	0.006
'non-English' Fathers	−0.104	−0.103	−0.104	−0.022
School-type (vs State High School)		(0.054)	(0.046)	(0.048)
Catholic Independent		0.030	0.042	0.024
non-Catholic Independent		−0.034	0.001	0.006
Other		0.017	0.026	0.044
HSC Achievements			(−0.251)	(−0.171)
HSC Course type (1=Science, 0=Other)			−0.109	−0.089
HSC Score			−0.204	−0.128
Social-Psychological variables				
Career benefits (Low=Career benefits)				0.293
Costs (Low=High costs)				−0.104
Significant Others (Low=Perceived Encouragement)				0.102
Academic Expectations (Low=Greater Expectations)				0.084
Regular Part-time job (Low=Main Source of Finance)				−0.077
Location of Institution (Low=More convenient)				0.059
Attractiveness of Social aspects (Low=More attractive)				0.097
Demands of Study (Low=Heavier)				−0.135
Job opportunities on leaving school (Low=More opportunities)				−0.119

Notes: a. For this set of analyses, variables were added in a controlled step-wise procedure, hence the number of cases is recorded as the same for each equation. As the correlations were calculated by 'pairwise' deletion, regression estimates are not affected. Some very minor variation is possible in the calculation of standard errors.

b. Underlined co-efficients are at least twice as large as their standard error.

c. Sheaf co-efficients are shown in parentheses. Their standard errors have not been calculated.

TABLE 6:5

TOTAL, INDIRECT AND DIRECT EFFECTS ON THE TWO-WAY DECISION OF THE PREDETERMINED VARIABLES, SCHOOL TYPE, YEAR 12 ACHIEVEMENTS AND THE TOTAL GROUP OF SOCIAL-PSYCHOLOGICAL VARIABLES CONSIDERED IN BLOCKS

Independent Variables	Total Effect	Indirect Effects			Direct Effect
		Through school type	Through Year 12 achievements	Through all social psychological variables	
	A	B	C	D	E
Sex (1 = female, 0 = male)	0.125[a]	0.003	0.039	0.011	0.072
Age	−0.013	−0.001	0.036	0.043	−0.091
Home Location (1 = metropolitan, 0 = rural)	−0.081	−0.001	−0.016	−0.045	−0.020
Socio-Economic Status	0.094	0.015	0.014	−0.008	0.073
Ethnicity (vs 'Australian' Fathers)	(−0.103)				(−0.024)
'English'	−0.013	−0.003	0.013	−0.029	0.006
'non-English'	−0.104	−0.002	0.001	−0.081	−0.022
Schol Type (vs State High School)	(−0.054)				(−0.048)
Catholic Independent	0.030	—	−0.012	0.017	0.024
non-Catholic Independent	−0.034	—	−0.035	−0.005	0.006
Other	0.017	—	−0.009	−0.019	0.044
HSC Achievements	(−0.251)	—	—	—	(−0.171)
HSC Course (1 = science, 0 = other)	−0.109	—	—	−0.021	−0.089
HSC Score	−0.204	—	—	−0.076	−0.128
Social Psychological Variables					
Career Benefits (Low = Fewer Benefits)	0.029	—	—	—	0.293
Costs (Low = Greater Costs)	−0.104	—	—	—	−0.104
Significant Others (Low = More Encouragements)	0.102	—	—	—	0.102
Academic Expectatioins (Low = Higher Expectations)	0.084	—	—	—	0.084

Note: a. Standardised co-efficients are shown with the 'sheaf' co-efficient in brackets where appropriate. The slight numerical discreprancies in some rows are due to rounding errors.

effect of SES. Whereas low SES has the effect of making an applicant more likely to turn down the offer, the effect of SES mediated via the Social-psychological variables is, very slightly, to make him less likely to do so. This small overall mediated effect may be disaggregated into the separate effects of the several variables. These results are shown in Table 6:6. We see here that the overall effect is principally the result of two conflicting effects: the effect of SES mediated by Career benefits is negative (−0.017) and that mediated via Costs is positive (0.012). It appears that, to the extent that low SES applicants are more aware of the instrumental value of the tertiary course for employment prospects, they are less likely than others to turn down their offer. However, this tendency is largely offset by the impact of the financial costs involved, which we would expect to fall more heavily on those with slender resources.

The impact of Costs should cause no surprise, but the strong instrumental orientation evident in the mediating role of Career benefits is perhaps worthy of note. We are, however, not entirely alone in finding evidence of such attitudes. Goldthorpe *et al.* (1969) in their Luton worker study found, in another context, strong instrumental orientations among certain groups of workers from lower SES backgrounds. It might not be unreasonable to assume that our lower SES group could share some characteristics in common with the upwardly aspiring skilled workers who are the focus of the Goldthorpe study.

The overall mediated effects shown in Table 6:5 for the school type contrasts are small (.017, −.005 and −.019). We also note from Table 6:4 that the increment in the multiple correlation co-efficient (R) from adding the school dummy variables to the model is slight (0.212 to 0.218), and this suggests that once the prior variables in the model have been controlled for, the effects of school type are minimal. Perhaps it is worthwhile to note, however, that the small effect shown for the Catholic independent school — State high school contrast (0.017) indicates that students from the Catholic schools were more likely to turn down offers of places. Elaboration of this overall effect in Table 6:6 shows that it is principally Costs that are causing this effect (0.013). Conversely, the effect mediated by Costs for the contrast between non-Catholic independent schools and state high schools (−0.010) indicates that students from independent schools were less likely to turn down offers because of cost factors. These two results suggest that there are some residual (uncontrolled) components of Socio-economic status operating through the school dummy variables (possibly family wealth and income and family size). Certainly, the moderate effect of non-Catholic independent schools mediated by Career benefits (0.018) is consistent with such an interpretation. This effect passing through Career benefits is to make the independent school students more likely to turn down their offers. That is, they were less likely to perceive Career benefits following completion of the course offered and **to this extent** were less likely to accept the offer. This finding is consistent with our earlier remarks that lower SES applicants were more likely to think in instrumental terms of Career benefits than were those applicants from higher SES backgrounds.

In Table 6:5 the effect of sex mediated by the group of Social-psychological variables is very small (0.011), about 9% of the total effect. However, this general effect gives a misleading picture. Table 6:6 shows a large positive effect of sex mediated by Career benefits (0.051), which is mostly offset by a number of smaller negative effects. This effect mediated by Career benefits suggests that, to the extent that they were less likely than males to think about tertiary education in career terms, females were more likely to turn down their offers of a place. The relative magnitude of this effect should be noted; the effect mediated via Career benefits is more than 40% of the total effect. The tendency is mostly offset by other negative effects mediated by the Social-psychological variables, **but the lack of a career-based orientation towards further education appears from our data to remain a powerful cause of the lower rates of female transition to tertiary education.**

There are some curiosities among the other Social-psychological variables mediating the effect of sex. The negative effect of Significant others indicates that influences of other

TABLE 6:6

TOTAL, INDIRECT AND DIRECT EFFECTS OF THE PREDETERMINED VARIABLES (AND SCHOOL TYPE) SHOWING THE MEDIATING EFFECTS OF THE SOCIAL-PSYCHOLOGICAL VARIABLES

Independent Variables	Total Effect	Indirect effect, mediated by:						Direct Effect
		School type and HSC Achievements	Career Benefits	Financial Costs	Significant Others	Academic Expectations	Other Social-Psychological Variables	
	A	B	C	D	E	F	G	H
Sex (1=Female, 0=Male	0.125[a]	0.042	0.051	−0.007	−0.010	−0.004	−0.019	0.072
Age	−0.013	0.035	−0.006	0.012	0.007	0.007	0.023	−0.091
Home Location (1=Metropolitan, 0=Rural)	−0.081	−0.017	−0.014	−0.027	0.003	−0.004	−0.003	−0.020
Socio-Economic Status	0.094	0.029	−0.017	0.012	0.001	−0.000	−0.003	0.073
Ethnicity (vs 'Australian' Fathers)	(0.103)							(0.024)
'English'	−0.013	0.009	−0.019	0.002	−0.005	0.002	−0.009	0.006
'non-English	−0.104	−0.000	−0.045	−0.002	−0.003	−0.010	−0.022	−0.022
School type (vs State High School)	(0.054)	(mediated by HSC achievements only)						(0.048)
Catholic Independent	0.030	−0.012	−0.002	0.013	0.006	0.004	−0.003	0.024
non-Catholic Independent	−0.034	−0.035	0.018	−0.010	−0.010	0.001	−0.004	0.006
Other	0.017	−0.009	−0.006	−0.002	0.008	−0.000	−0.018	0.044

Note: a. Standardised co-efficients are shown with the 'sheaf' co-efficient in brackets where appropriate. The slight numerical discrepancies in some rows are due to rounding error.

persons render females slightly less likely to turn down offers after the effects of the preceding variables in the model have been removed. That is to say, the effect we observe for Significant others is that part of the total effect of other persons remaining after the influences of Career benefits and Costs have been taken into account. If the hierarchical ordering of the Social-psychological variables were to be changed, it is possible that the total impact of Significant others in mediating the influence of sex would be altered. This possibility was tested and found not to be the case. When Significant others is added to the model before any of the other Social-psychological variables, its role in mediating sex is −0.010, the same as when it is added later in the model. Thus it appears that the perceived influence of peers, teachers and parents is, if anything, tending to make females more likely than males to take up the offer of a place in tertiary education. The effect is small, but it certainly suggests that the encouragement of Significant others to continue to tertiary education has no greater impact on males than on females.

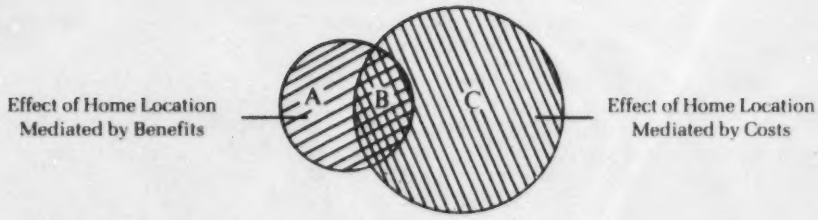
In contrast to the preceding variables, home location is strongly mediated by the Social-psychological variables as a group. Table 6:5 shows that of a total effect of −0.081, only −0.020 is directly attributable to home location net of the mediating variables. More than three-quarters of the total effect of home location is accounted for by the intervening variables, and over half by the mediating effect of the Social-psychological group (−0.045 in Table 6:5).

When the separate effects of the various Social-psychological variables are disaggregated (Table 6:6), the powerful mediating role of Costs (−0.027) is apparent. However, owing to the hierarchical nature of the inclusion of the separate Social-psychological variables, this effect of Costs is net of the effect of Career benefits. Because in this particular case, Costs were felt to be, potentially, a highly salient variable for students whose decision on the VUAC offer could incur the expenses of living away from home, some additional analysis was undertaken to tease out the unique and combined mediating effects of perceived Costs and Career benefits on the effect of home location.

The results of this analysis are presented in the form of a Venn diagram showing the union of the effects of home location mediated by Career benefits and Costs (Figure 6:2). It will be noted that the effect mediated via Costs is larger than that passing through Career benefits. The total mediating effect of Career benefits is −0.014, the same as the effect shown in Table 6:6 as Benefits are included before any other Social-psychological variable. The total effect mediated by Costs, on the other hand, is −0.036, considerably larger than the net mediating effect (−0.027) shown in Table 6:6. The figure in the table shows the mediating effect of Costs net of the joint effect with Career benefits, and is equivalent to the area marked 'C' in the Venn diagram.

The conclusions we draw from the analysis are, first, that financial considerations had a strong influence on students from rural home addresses. Nearly 45% of the total effect of home location is mediated by Costs. Secondly, less than half of the apparently moderate effect of Career benefits is uniquely due to a consideration of these instrumental advantages of tertiary education. The remainder of the effect is shared with a consideration of costs.

There is additional evidence which shows that cost considerations are of significantly greater importance for rural students. If we treat the answers to Question 24 (anticipated financial problems) as a simple scale, we may take the mean value for urban (2.81) and rural (2.31) applicants and test if these means are significantly different. When this test was carried out, the 't' value obtained was 5.49 ($p < 0.001$) showing that a clearly significant difference existed in the perceived size of financial problems. Clearly the acceptance of an offer of a college or university place entails, for many students from rural backgrounds, a move away from home that is seen as incurring heavy financial penalties, and this is an important part of the explanation of the inequality in access to tertiary education we have found for students from country backgrounds.



A + B = Effect Mediated through Career Benefits
B + C = Effect Mediated through Costs

A = Effect through Career Benefits net of Costs
B = Effect through Career Benefits and Costs jointly
(58% of the effect of home location mediated by benefits also passes through costs whereas 22% of the effect of home location mediated by costs also passes through benefits)
C = Effect through Costs net of Career Benefits

FIGURE 6:2
DIAGRAM REPRESENTING THE EFFECTS OF HOME LOCATION MEDIATED BY PERCEIVED COSTS AND CAREER BENEFITS

One other variable, convenience of location of institution offered (Question 11) was intended to test for similar difficulties. However, our results suggest that the term 'convenience' does not fit well with the vocabulary of rural students. It seems that students from country backgrounds perceived the location of the institution offered as expensive, rather than inconvenient. Perhaps students living in the country see **themselves** as inconveniently located, rather than the mostly centralised institutions offered to them. A t-test similar to that described in the preceding paragraph was conducted on Question 11, 'convenience of location.' There was no significant difference in the mean scale value for rural and metropolitan students.

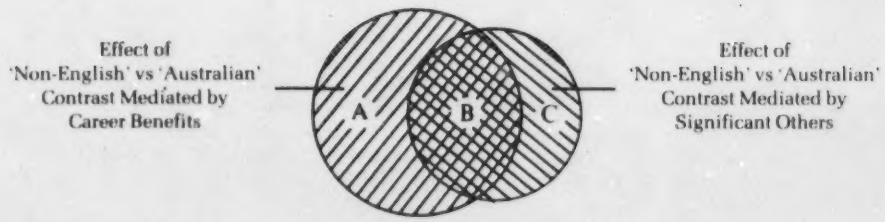
We do not claim that this analysis of the effect of home location is anywhere near complete. There has been no attempt in the analyses undertaken so far to take into account the location of the institution offered and its proximity to the applicant's home address; nor have we utilised replies to Question 26: 'Was it necessary for you to leave your parents' home . . .'. However, although we anticipate that further analysis will elucidate the mechanism discriminating against students from non-metropolitan home addresses, the general conclusion of the analysis, particularly the key role of financial costs, should remain unchanged.

By far the largest mediating effect of the Social-psychological variables applies to Ethnicity. In Table 6:5 the mediating effect for 'English' students is −0.029, and for 'non-English' −0.081; the largest mediating effect of all and accounting for 78% of the total effect of the 'non-English'-'Australian' contrast. The small direct effects for the ethnic dummy variables (0.006 and −0.022) suggest that there is little in the causal component of Ethnicity that does not pass through the mediating variables in the model, and that of these mediating variables, the block of Social-psychological variables is the most significant. In other words, **the main reasons from the greater proportions of immigrant students taking up offers lies in their perceptions and expectations.**

It is interesting to speculate on the reasons for this. The cultural environment of the migrant family may appear to be an unfavourable milieu for developing a commitment to tertiary education, particularly when it is considered that the educational process is an integral part of the dominant host culture. Our analysis suggests, however, that a similar instrumental orientation to education is found among students from migrant backgrounds as was discerned in the case of the applicants from the lower socio-economic status groups. Further, we have evidence that a great part of the influence of Significant others in the migrant student's environment operates through the perceived career benefits of tertiary education.

We shall focus on the 'non-English'-'Australian' contrast in the following discussion, but it should be noted that generally similar, though smaller, effects arise in the case of the 'English' dummy variable. The disaggregation of the effects of the 'non-English'-'Australian' contrasts as mediated by the Social-psychological variables (Table 6:6) reveals the importance of Career benefits as a mediating influence. Of the total effect of −0.104, −0.045 or 43% is mediated by perceived Career benefits. This suggests that the decision on the VUAC offer is taken with the instrumental benefits of tertiary education firmly in mind. However, interesting questions follow immediately from this, particularly relating to the source of this concern with Career benefits. Particularly, the role of Significant others is potentially influential, and perhaps the small co-efficient for this mediated effect in Table 6:6 is due to the hierarchical ordering of the Social-psychological variables. This co-efficient (−0.003) refers to the effect mediated through Significant others above and beyond the effects mediated by Career benefits and Costs.

To deal with this problem, additional analysis was undertaken to establish the relationship between the mediating effects of Career benefits and Significant others. The results are presented in the form of a Venn diagram in Figure 6:3. This diagram represents the large total mediating effect of Career benefits (−0.045) and shows that about 19% of



A + B = Effect Mediated through Career Benefits
B + C = Effect Mediated through Significant Others

A = Effect through Career Benefits net of Significant Others
B = Effect through Career Benefits and Significant Others jointly
(19% of the ethnicity contrast mediated by benefits also passes through significant others whereas 71% of the contrast mediated by significant others also passes through benefits)
C = Effect through Significant Others net of Career Benefits

FIGURE 6:3

DIAGRAM REPRESENTING THE EFFECTS OF THE CONTRAST BETWEEN NON-ENGLISH' AND 'AUSTRALIAN' FAMILIES MEDIATED BY PERCEIVED CAREER BENEFITS AND THE INFLUENCE OF SIGNIFICANT OTHERS

this effect overlaps with the mediating influence of Significant others. However, the joint effect (−0.008) is a much higher proportion of the smaller total mediating effect of Significant others. In Table 6:6, the effect of Significant others is shown net of Career benefits and Costs (−0.003). Disregarding the Costs variable, we can see in Figure 6:3 that the total effect mediated by Significant others is much larger than that suggested in Table 6:6. This total effect is −0.012 and is shown in areas B and C of Figure 6:3. The net mediating effect, shown in Table 6:6 as −0.003, corresponds to area C in the diagram. We note that only 29% of the total effect of Significant others is revealed in the table, the remaining 71% is shared with Career benefits and hence is incorporated with the coefficient for Career benefits in Table 6:6 because of the hierarchical ordering of the Social-psychological variables.

From this analysis we conclude that the influence mediated by Significant others for students from 'non-English' backgrounds is modest, about 11% of the total effect. However, the process whereby the influence of Significant others is exerted appears largely to involve the other persons in helping to shape the Career benefits perceptions of the applicants. Nearly three-quarters of the influence of Significant others appears to work in this way. The role of expectations of Career benefits in mediating the effect of 'non-English' ethnicity, however, is so large that its joint effect with Significant others is only a small proportion (19%) of the whole. Our conclusion is that the instrumental orientation towards tertiary education is partly, but by no means wholly, derived from the influences of Significant others, and that this view of further education in terms of the benefits it offers is a major factor in accounting for the higher rates of taking up places among the 'non-English' compared to the 'Australian' applicants.

The final predetermined variable which has strong effects mediated by the Social-psychological group is the applicant's age. As mentioned previously, we are cautious in our interpretations of this variable as we believe that two related but distinct factors may be measured by it.[1] With this caution in mind it is interesting to note that the inclusion of the social-psychological variables results in the direct effect of age being increased markedly, the effect mediated by these variables as a group being 0.043 (Table 6:5). The total effect is small, −0.013, indicating that the older students were slightly less likely to turn down offers. The direct effect is −0.091 which indicates that, in as much as there is an effect of age **per se**, over and above the other variables in the model, it makes the older students much **less** likely to turn down offers. However, this net effect is largely counteracted by the effects mediated via the Social-psychological variables, (0.043), which makes the older students **more** likely to turn down their offers. It will be recalled from the previous chapter that year 12 achievements operated in a similar fashion. Analysis of the four main factors among the Social-psychological variables shows that most contribute to this effect. In as much as older students were more likely to consider the financial Costs, had less encouragement from Significant others, and had lower Academic expectations, they were more likely to turn down offers. There is also a comparatively large effect mediated by the other Social-psychological variables, but these individual influences await further analysis. Taken together, these results suggest that older students **per se** have a stronger intention to go on to tertiary study than younger students, but that other social and personal factors intervene in the decision-making process to counteract this intention.

Conclusion

In our discussion of the effects, both directly attributable to the Social-psychological variables and mediated via them, we have not made any general comments about the role of these factors **in toto**. Making generalisations about such a diverse group of indicators is a difficult task. However, one common aspect of the Social-psychological variables is that they arise from individual differences in the applicants' perceptions of and expectations

about tertiary education. Unlike the prior variables which are mainly attributes relating to groups, the Social-psychological variables measure individual differences in orientations to tertiary education. Moreover, the Social-psychological variables seem to be more potentially fruitful for policy making. It would appear that the relevance of tertiary education to careers, the financial burdens that further education imposes, the value placed on it by teachers and the community in general, and the location of colleges and universities are all more amenable to intervention by educational policy makers than are the predetermined variables such as age, sex, and socio-economic and ethnic background.

Because of the potential policy relevance of the factors we have grouped under the rubric 'Social-psychological' variables, it may be worth concluding the discussion by pointing out what a powerful **direct** causal effect they have on the decision to continue into tertiary education, especially in comparison with the predetermined variables, and even other mediating variables. As a measure of the explanatory power of our model, we have used the co-efficient of multiple correlation 'R', rather than the more familiar R-square, because the interpretation of R-square in 'variance accounted for' terms has been considered problematic in regressions with binary dependent variables.[2]

Considering then the multiple correlation co-efficients from Table 6:4, we note that the values from the model with the predetermined variables only are very small ($R = 0.212$ without the school-type variables, and $R = 0.218$ when school-type is included). The addition of HSC course-type and best-four score adds appreciably to the explanatory power of the model, with a multiple correlation of 0.326. However, the largest single increase in R comes as a result of adding the Social-psychological block to the model, and the multiple correlation co-efficient is 0.560 after these variables have been included.

In addition to these powerful effects attributable to the Social-psychological variables in themselves, they also play an important part in mediating the effects of other variables which represent group differences in access to tertiary education. Thus we conclude that the group of Social-psychological variables could profitably become the focus of attention for policy makers for three main reasons. First, as mentioned above, unlike the attribute variables, the Social-psychological variables are amenable to policy interventions. The age, sex or social status of students cannot readily be altered, but it is possible to introduce measures to affect the expectations and perceptions of individual students. Secondly, the Social-psychological variables in themselves have very powerful effects on the decision on whether or not to continue with tertiary education. This suggests that if the perceptions and evaluations can be changed, large consequential changes in the proportions of students taking up offers should result. Thirdly, most of the Social-psychological variables play an important role in mediating the effects of variables that cannot themselves be changed. For instance, we find that females were more likely to turn down offers, but a large proportion of this effect is due to the fact that females perceived fewer career benefits resulting from a course of tertiary education. If females' attitudes could be changed on this matter so that their perceptions were closer to those of the male students, we should expect that the adverse mediating effect of the perception of career benefits would be largely negated, and at least a part of the inequality in the access of females to tertiary education would be overcome. This is just one example of how the mediating role of the Social-psychological variables could be used to overcome inequalities resulting from sex, age, home location, ethnicity and social status in transition to tertiary study.

Notes

1. See Chapter 5 for a more extended discussion.
2. See for example: Russell and Rives (1980), Neter and Maybes (1970).

CHAPTER 7

DEFERRING AND DECLINING: A SYNTHESIS

In the preceding four chapters we have drawn on related data sets to develop and test models of the transition of young people to tertiary education in Victoria. The models are complex, and we are keenly aware that at times we have not led the reader through these complexities as skilfully as we might. We attempt to regain some balance in the complexity of our presentation in this chapter by summarising some of the main effects on enrolment decisions and by illustrating these effects from our case study data and the responses to the open questions on the survey.

We focus here on deferring and declining. We have arranged our summary models so that they characterise those who turned down their offers of college or university places. We also interviewed only those who had deferred or declined and we have collated the open questionnaire responses from only this group. In a final selection we also chart their immediate destinations.

In the summaries, we have attempted to follow the spirit of our previous argument about those kinds of effects the analysis of which might be most useful for policy review and development. Thus we examine in detail the way in which the effects of the four main predetermined variables in our model are mediated through the achievement and social-psychological variables. These variables are the applicant's sex, home location, socio-economic status and ethnicity.

These four effects are all associated with significant inequalities in the applicants' enrolment decisions. It is tempting to conclude that they are also associated with significant inequalities generally in access to tertiary education in Victoria. Support for this conclusion, however, must await a demonstration that there are not compensating differences in the other discontinuities in transition; in persistence with the final two years of secondary school, in rates of application for places in colleges and universities, and in the relative success of applications. There has developed recently, for example, a clear gap in persistence to the final year of secondary school in favour of females. While it is not as large as our estimate of the effect of the applicants' sex on enrolment decisions in favour of males, it does give an indication that our conclusions might need to be modified when detailed data on transition through years 11 and 12 of secondary school become available.

In the summaries, we also focus on some direct effects of the achievement and social-psychological variables. As the effects of school type seem to be largely assimilated to the effects of socio-economic status, we have not looked at that variable again. Instead we summarise here the effects of Year 12 achievements; perceptions of costs, benefits, the influence of significant others and academic expectations; and the nature of the offer made to the student. More work needs to be done on the mediated effects of some of these variables. For example, we have not examined how the net effects of type of institution might be mediated by differing perceptions of the costs and benefits of studying at different types of institutions, nor how the effect of preference level might be mediated by academic expectations.

As we have evaluated them from our present models, we believe also that the direct effects of (particularly) Year 12 achievements, the social-psychological variables, and the type of offering institution are persuasive in their own right. This relatively small set of direct and proxy measures of individual differences in achievements, expectations and perceptions predominate as predictors of enrolment decisions over the predetermined group differences. Individual inequalities in access to tertiary education, therefore, seem to be much more pervasive than group inequalities. If asked to identify the more urgent priorities for debate, intervention and further evaluation which our research suggests, we would point to the potent effects of perceptions of the benefits and costs of tertiary

education, the effects of Year 12 course type and results, and the effect of receiving an offer from a university rather than a college. Taken together, and very broadly, these effects suggest to us that many Year 12 students hold essentially 'meritocratic' and instrumental views of tertiary education.[1] (That is, tertiary education is only for potentially high achievers and has the purpose of job training.) If this is so, then self-selection seems to be working in conflict with the ideals of a liberal higher education system, and that system might need to examine carefully the image it projects to its prospective students.

Some Group Inequalities in Access

Females

Our basic regression model was calculated from the data on the VUAC population. We estimated from it that the total effect of the applicants' sex on the two-way decision was 0.08 in metric terms. From our sample data, and using a model which also included the socio-economic status and ethnicity of the applicants' families, we estimated that the total effect of sex was 0.12. Clearly, **other ascribed characteristics being equal,** females were more likely than males to turn down their VUAC offer. At present we estimate that this effect is between 8 and 12 percentage points difference between males and females.

In Figure 7:1 we have summarised the main causal paths from the applicants' sex to the two-way decision, and included tentative estimates of the relative contributions of the mediating effects. We cannot provide an estimate of the relative size of the residual (direct) effect, both because the estimates of indirect effects derive from two separate data sets, and because there are some minor countervailing indirect paths we have not included in the simplified model.[2]

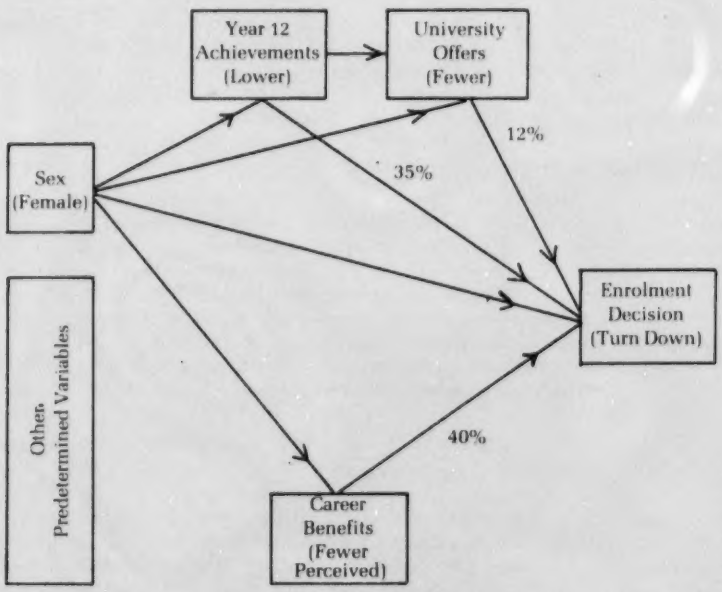


FIGURE 7:1
THE MAIN PATHS FROM THE APPLICANT'S SEX TO THE TWO-WAY DECISION

From both the population and sample data we estimate that about one third of the total effect of sex on the two-way decision is mediated through the lesser tendency for females to take a science course at HSC, and their consequently lower HSC scores. From the sample data we also estimate that a further 40% of the effect of sex is mediated through the tendency for females to perceive fewer career benefits from tertiary education. This 'social-psychological' effect on enrolment decisions is partially offset by a number of small influences which appear to have encouraged females to take up their VUAC offers. It is perhaps of interest to note that the encouragement of significant others slightly favoured females in relation to taking up the VUAC offer, and that males and females do not appear to have been differently affected by academic expectations.

A further effect on the enrolment decisions of females as compared with males was noted in Chapter 4. Being more likely than males to receive offers from colleges as against universities, females were more likely to turn down their offers. Some 12% of this effect is independent of the Year 12 achievements of females, but it is likely also that some of the prior effect of Year 12 achievements passes through the kind of institution making the offer.

We interviewed a girl we shall call Robyn, whose case illustrates how taking a mixed non-science HSC course might lead to a student turning down a college or university offer.

Robyn attended a Technical High School and liked this because she was able to undertake a wide variety of subjects including trades. When choosing Year 12 subjects she wished not to narrow the field too much and decided to study a mixture she liked. Her course comprised English, English Literature, Environmental Science, Legal Studies and Maths. Of these, the only subject that she definitely wanted to continue at a tertiary level was Environmental Science. At the same time she had no career firmly in mind, and the careers teacher at school could neither suggest any suitable career for her to follow nor could she give advice on tertiary courses that might interest Robyn "because I had no pure science background."

Robyn ended up being quite confused. She was advised to put two university Law courses as her first two preferences because she "may as well aim as high as possible". These were followed by Environmental Science courses. No others appealed to her.

She found the workload of Year 12 heavy, did not do well enough to get her first choice, and was offered her fourth choice of a teaching course in Environmental Science. She swayed backwards and forwards about it, deferred and then eventually declined the offer in November 1980. She said she "didn't feel positive enough about it" and "didn't want to get locked into teaching" (to which she wasn't committed) for she has "a great fear of doors closing".

This year (1981) she is reapplying for another Environmental Science course which does not rely on a science background and seemingly opens the door to many non-teaching positions.

Robyn's case illustrates a portion of our model perfectly, in that her low HSC score apparently led to her missing a high status university offer and resulted instead in an offer from a less preferred college course. Other highly competitive courses might function similarly to university courses in this regard as the following questionnaire response suggests:

> "I originally wanted to be a kindergarten teacher which was my number one preference. I was also accepted at a hospital to do nursing. I received my results which were very ordinary – consequently, I didn't get into kinder teaching so I decided to nurse. This begins in 1981 and therefore I didn't accept my VUAC offer which was my number two preference."

The other aspect of our summary model for sex effects suggests that girls perceived fewer career benefits from tertiary education and were consequently more likely to turn

down offers of college or university places. Some respondents had obviously considered the 'benefit' side of their decision very seriously indeed. For example, the following statement on the questionnaire was made by a girl who had very high grades in sciences and had been offered a place at a prestigious university:

"The main factor which influenced my decision to take a job (as a clerk) rather than continue my education, was the apparent excess of graduates in the workforce. I believe that unless a person attempts a course that qualifies them for a profession, tertiary education is pointless. Degrees in Science and Arts are not worth the paper they are written on."

Another girl explained the decision-making process which led her to a similar conclusion and occupation as follows:

"I received a job with a bank, accepted it and had been there over a month when the VUAC course was offered. I liked the job; it seemed suited to my abilities and I was progressing well. Knowing that studying was one of my pet hates I reasoned that the course which involved hours of studying was the second best alternative and the job which involved on-the-job training was a better alternative. There were also opportunities to advance."

Another questionnaire respondent described the questions which went through her mind before she eventually decided to decline. The answers obviously suggested that the course offered to her did not provide enough future benefits:

"(a) What course did I really want do do?
(b) If I married in say 5 years and wanted children, I'd only do a few years' work – was it all worth it?
(c) Could I afford to be without a weekly income for so long?
(d) If I could get a job now doing the work I wanted was there any point in doing a course?
(e) Would I be able to cope with study when I had found school hard?
(f) Would I be certain to get a job when the course was completed?"

In quite a number of cases the college or university course was thought of as second-best to another career, particularly nursing or other paramedical occupation. The benefits of these were considered in different ways. Some students had never seriously considered anything else but a hospital nursing course, for others there were various benefits to be had from practical paramedical training:

"I had applied several years before to do nursing and when offered several positions at different hospitals I took them and took no notice of my VUAC application that I had been advised to fill in."

"I deferred the course offered by (a metropolitan CAE) just in case I didn't like Dental Therapy. However, the latter's all I've ever wanted to do . . . . To be honest it was just a 'maybe' situation because I didn't know what was ahead of me."

"Even though I put down (a nursing course at a tertiary institution) on my VUAC preferences I actually wanted to do my training in a hospital because I thought college training would be less practical and one of the reasons that I wanted to do nursing was to have the contact with people rather than the academic side."

Sometimes the decision did not seem to be such as easy one to make. Our interview with Patricia provided such a case.

Pat went to a well-known independent school which was very academically inclined. All careers guidance was along the lines of 'jobs after courses.' Her HSC course consisted of a mixture of arts and sciences and she was strongly encouraged to apply for Arts courses at universities. However she basically wanted to nurse and the advice confused her.

Her first three preferences were for university Arts courses followed by several

teaching courses, as she had vaguely considered teaching as well as nursing. She thought that getting into university would be easy, but admitted that she didn't work as hard as her peers. Thus she didn't do as well as expected and was offered her second choice.

She said that "had I been offered (the first choice) I would still have been confused about the choice of university or nursing but the offer of the second made things easy." The reasons she gave were:

(i) she disliked the physical environment of the university offered
(ii) she had a relative teaching there and she didn't want to be in the same institution
(iii) all her elder brothers and sisters had been to her first choice institution and she would have been the "dumb odd one out"
(iv) she was "pretty sure I was going to do nursing"
(v) she was going to travel overseas and could not take up a place immediately
(vi) she had not heard from hospitals that she had been accepted and she kept a place in case this didn't happen
(vii) she felt she might change her mind about things during the year.

Since Year 10 she had been on the list of applicants for a place at a major Melbourne hospital. During her schooling she had several letters saying that they were still considering her. After HSC she confirmed that she still wanted to be considered and in October 1981 heard that she had been accepted and was to start training shortly. She will now decline her deferred place.

Finally, our path diagram suggests that there is a residual direct effect of sex on the applicants' enrolment decisions. Quite a few open comments on the questionnaire suggest that at least part of this may result from a traditional view of female roles. Expectations of marriage and starting a family, the necessity to save for an impending marriage, and the need to support a husband through his training were all mentioned as reasons for deferring or declining:

"I knew I would be married within the next year so I really didn't want the course offered."

"Having a boyfriend here is an attraction to stay. When we get married I won't go out to work so there's no need to do 3–4 years hard work."

"I became engaged in Jan '80 and decided that it would be sensible to save money with my fiance. I also thought that it would be impossible to be married, be a good wife and also be a student."

"I would have accepted the course if it had not been for the fact that I had decided to marry as this brings with it large expenses. I decided therefore to get a job and save as I felt it was wrong of me leaving the financial burden to my fiance. I hope to do part-time study after we're married."

"My husband is a private pilot working towards becoming a commercial pilot. Flying is expensive and so we require two wages. We decided to put his career first as there is an age limit on trained pilots. I shall take up studying some time in the future. If I hadn't married I wouldn't have deferred."

Country Applicants

Applicants with country home addresses were also rather more likely than applicants from metropolitan homes to have turned down their VUAC offers. From the restricted 'basic' model, we estimated that the effect of home location resulted in an 11.4 percentage point difference in the rate of taking up offers. From the more elaborate survey data model our estimate of the difference was 8.1 percentage points. As we noted in Chapter 5, part of the discrepancy may be due to the inclusion of the students' ethnic backgrounds in the survey model. That is, part of the difference in the rate of turning down offers between

country and city students may be due to the greater concentration of children of non-English speaking immigrants in the city who, if they received an offer, were more likely to go on to a college or university. Sampling errors, of course, must also account for some of the difference between the two estimates.

We have summarised the main causal paths from the applicants' home location to the two-way decision in Figure 7:2. Our estimate of the amount of the home location effect which is mediated through Year 12 achievements varies from about 9% when calculated from the population data to about 20% when calculated from the survey data. Again, the discrepancy is probably due to the somewhat different models. In Chapter 3 we showed that virtually all of this mediation is due to the lower HSC scores of country applicants, irrespective of the kind of HSC course they took.

From the population data, we estimated that a further 11% of the effect of home location was independently mediated by the kind of institution making the VUAC offer. Country students were less likely to receive offers from universities and, in turn, were more likely to turn down their offers. It is also likely that some of the effect of country students' lower HSC scores will be passed through the type of institution making the offer.

Turning to the 'social-psychological' variables, Figure 7:2 shows that both perceived career benefits and perceived financial costs mediate the effect of home location on enrolment decisions. Country students perceived both fewer benefits and greater costs and therefore were more likely to have turned down their VUAC offers. We showed in Chapter 6 that much of this mediation was either through perceptions of increased costs or jointly through perceptions of costs and benefits. Little of this mediated effect of home location passes directly through career benefits. These findings suggest that the interaction between perceived costs and benefits may be quite powerful, both directly, and as a mediating effect. Even ignoring any possible interaction, almost 45% of the effect of home

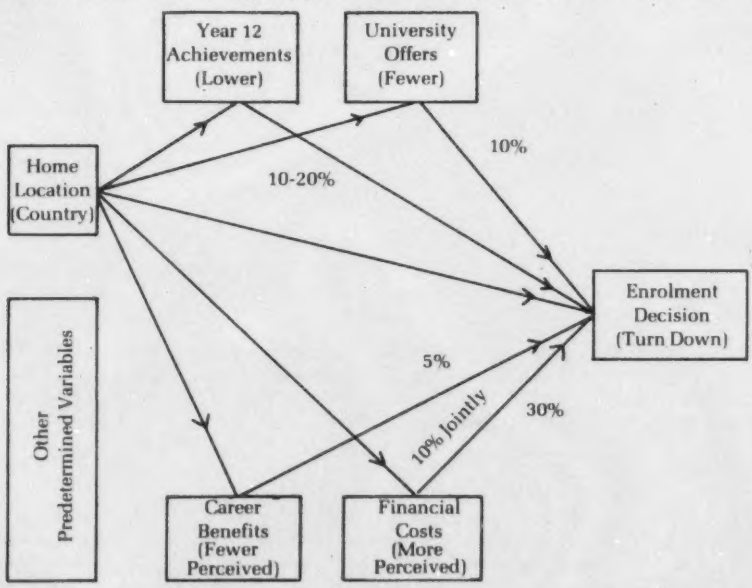


FIGURE 7:2
THE MAIN PATHS FROM THE APPLICANT'S HOME LOCATION TO THE TWO-WAY DECISION

location on enrolment decisions is mediated by the effects of perceived costs and benefits and their joint effect.

Our data thus suggest quite strongly that policy initiatives which were directed to the circumstances which give rise to these perceptions could have an important impact on the unequal access of Victorian country students to tertiary education. Again, unfortunately, because our estimates of the indirect effects of home location derive from two separate models, it is not possible for us to estimate accurately the size of the direct effect.

Three main themes emerged from our interviews with country applicants and from their open responses to the questionnaire. They were the prohibitive costs of attending a college or university in Melbourne; a related view of the relative attractiveness of career opportunities in the local area; and an attitude towards Melbourne as presenting an alien environment for those from a (sometimes freely admitted) conservative background. Our interview with Stephen illuminated this latter feeling and also demonstrated the effect of a lack of self confidence allied with low academic achievement.

Stephen had a chequered academic career at high school. Up until 12th year he had found the work relatively easy and generally did very well. Then in 6th form he was "slugged with a double workload" with which he found difficulty coping. While he was offered a place in a country college at the end of this first year HSC, he decided to defer the offer and return to school for 1981.

The first time he attempted HSC, Stephen took Chemistry, Environmental Science, Maths, Geography and English. The last two subjects caused him many problems. In Geography he said that he "couldn't satisfy the teacher in anything he did." Also English meant a lot of dull books" as far as he was concerned.

Consequently, he found this first attempt hard. Geography took up more time than he could afford and he was unable to complete a Chemistry case study as a result.

After a great deal of careers guidance and pastoral care, Stephen decided on the career of Industrial Chemist and applied in 1979 for only two courses, both at a country CAE: Applied Chemistry and Geology. He said that he did not look at courses in the metropolitan area because he "detests big cities." Also he wanted to go to a smaller institution where one-to-one contact was possible. He had heard that this was so at the college he had chosen.

When the HSC results came out he had a very low score. This came as no surprise to him although he knew he had the capability for doing better. He said he was quite surprised to get an offer of his second choice but decided to defer the offer and eventually to decline it. He offered many reasons for doing this:

(i) He preferred Chemistry
(ii) He felt unable to cope with a change in routine, study conditions and moving.
(iii) He was a loner from the country and would find the whole process of adapting to the life of a college or university difficult
(iv) He felt unsure of himself and unprepared at 18
(v) He knew he could do better and wanted to improve his HSC results

So he decided that the best thing to do would be to return to school and repeat HSC. In 1980 therefore he dropped Geography so that he could concentrate on the other four subjects. This time he has been more relaxed and has a better grounding. He feels confident of being offered a place because he has one of the best Chemistry case studies in the State (the school is to retain it in the library) and his internal assessment has been good. Vocational advice has continued to reinforce what he wants to do and once again he has applied to the same institution and the same courses. Again he did not try for Melbourne as friends who have moved there are dissatisfied, while other friends at the country CAE are enjoying themselves. Also he has heard that Science students at the CAE are guaranteed jobs before the end of the course.

When Stephen is is offered a place this time he will take either course as he has discovered that the college has a common first year and he could switch from Geology to Chemistry at the end of the year. Although he was unaware of this possibility last year he said that it would have made no difference to his decision to defer and then decline.

He still doesn't know how he will cope at tertiary level and he still worries about social life and adjustment, but he will persist as he has great interest in the sciences and eventually hopes to do research.

The reinforcing effects of perceived costs of tertiary study and a lesser valuing of the career benefits did not emerge in the interview with Stephen. The costs of tertiary study were, however, commonly mentioned in respondents' open comments to the questionnaire:

"The inconvenience of actually attending a university/college was huge because I live in Geelong and my preferences were in Melbourne which would mean a huge upheaval for me out of my family environment. Also the cost of going there was totally out of my reach."

"If I had lived in Melbourne I may have accepted the offer. But the added expense of boarding away from home and transport costs were too great to accept. Country students, because of these added costs, are less likely to accept positions and are more disadvantaged."

We have mentioned previously that the notion of inconvenience of institutions seems to be assimilated to that of costs for country students. In the open comments to the questionnaire, in fact, many more metropolitan students who deferred or declined mentioned inconvenience as a contributing factor. For some of this group also, inconvenience was at least related to costs.

"I wanted to do an Arts course a stone's throw from my home but even with a good TOP score I still had to go to (another university) which is too far and too costly."

"I had to defer in order to obtain a car and find alternative accommodation (which isn't easy) as the family home is situated 30 miles from the university."

A well established belief about the transition of country students to tertiary education (and particularly those from lower SES families) is that these students often have limited career perspectives and that teacher education courses offer a highly salient opportunity for upward social mobility. Thus, it is now argued that the lack of teaching studentships and declining employment opportunities are limiting opportunities for this group. We have not been able here to focus specifically on this issue. Certainly, however, the lack of opportunities in teaching were discussed by some country students as the major reason for turning down a VUAC offer. Our interview with Julie exemplifies this process.

Julie studied a complete mixture of subjects at a country high school. The mixture was chosen because she thought she had a chance of passing these particular subjects and also because she had no particular career in mind except possibly teaching which had no subject prerequisites and therefore wasn't restricting.

When considering courses and preferences on the VUAC form she looked for an Art/Craft course but could not find one that concentrated on Craft rather than Art. So she applied for teaching courses to which she wasn't really committed.

Although she was offered her first choice she decided to defer. This was because her teachers had told her that teaching was not a promising career and if she was not sure whether to do it then it would be better to defer, work, think about it and decide later. Also she said that the offer of a job to work in the local bank came up at the same time.

She decided to take up the job and several factors came into her reckoning. Firstly, as she wasn't committed to teaching, she was worried about wasting 3 or 4 years for nothing.

She also considered that "from a teaching course you can do nothing else. It's not like doing, say Economics, which can lead to several careers."

Secondly, she weighed up what advantages she would have with the banking career. Although she didn't see many prospects in the position as "there's not much opportunity for a girl" she found that it provided security. Julie said that she "could never be kicked out." Also in its favour she could work conveniently to her home, and her colleagues were friendly. She already knew many from the small town community. In addition, there was the attraction of becoming financially independent.

Finally, she also had a boyfriend in the area and that "was an attraction to stay. If I marry I would not be a career woman but stay at home so a course might be wasted while now I am already earning in a career."

Julie has now changed her decision from defer to decline and she says she has no regrets.

Nursing, accountancy and drafting were all mentioned in a similar context to teaching by country applicants who deferred or declined. Perhaps, again, they represent the restricted career perspectives of these students. For example, one questionnaire respondent wrote:

"I had the chance of two draftsman positions – one in Melbourne and another in Ballarat – as well as the offered course. I finally chose the Ballarat position because it was more economical living at home, the salary was better, my parents preferred me to stay and it was a good secure job even though I would have been more suited to the types of drafting in Melbourne. Whilst I felt I would get most enjoyment from the course in town and regional planning, I felt I could come back to it after 12 months experience, saving and a break."

While we were not able to capture it in our questionnaire analysis, a final theme mentioned by many country respondents was the percived difficulties of adjusting to a large institution and living in the city. Thus a female respondent wrote:

"Accepting the offer would have meant living in the city – something which I could not bear."

A country male commented:

"Due to living on my family's property all my life I didn't know whether to go to university or stay on the land. So at first I accepted but deferred so that I could earn some money. But now being on the land this year, the thought of living in the city is even more deplorable."

The difficulty of adjusting to a large institution was influential in the decision of a girl who declined. She stated that:

""The most important factor behind declining lies entirely in my character. All my life I've lived in the country and therefore have only dealt with a small population. Therefore I felt that I couldn't make the transition to a large tertiary institution."

Finally, a few students suggested quite clearly that they felt a conservative distaste for life in the city:

"I didn't want to live like university students in often immoral ways and quite often broke. Also I like the outside type of work on farms rather than being shut indoors studying."

Family Background: Socio-economic Status

As we showed in Chapter 5, it is not possible to understand fully the effects of socio-economic status and ethnicity on enrolment decisions when they are considered separately. The effects of SES were partly masked by the ethnic origins of the applicants' families, and there was quite a strong interaction between the two variables. Never-the-

less we have summarised the effects of SES and those of 'English' and 'non-English' families separately in Figures 7:3, 7:4 and 7:5, and we have also collected the case study materials together separately. In interpreting these summary findings, the interaction should be kept firmly in mind. There was a strong relationship between SES and the two-way decision only for those students from 'Australian' and, particularly, 'English' families. Those from 'non-English' families accepted offers of tertiary places much more readily than others and their socio-economic origins appear to have had little effect on their decisions.

We estimated that the total effect of socio-economic status on the two-way enrolment decision was 0.046 in metric terms. This is the magnitude of the effect net of the other predetermined variables in the model, including ethnicity. It is a little difficult to give a meaningful interpretation to this co-efficient in percentage terms as any interpretation is limited to the variability in SES of the students in our particular sample. Thus we can only say that the effect of SES is equivalent to an increase of 14 percentage points in the likelihood of the highest SES student **in our data set** accepting a VUAC offer as compared to the lowest SES student. When we compare the size of the total SES effect to that of the other predetermined variables (using the standardised co-efficients of Table 5:2, Column B) we find that it ranks third, after sex and ethnicity and above home location. All these four effects are, however, roughly similar in magnitude.

Figure 7:3 shows that two sets of variables mediate the effect of SES in relation to the two-way decision. These are a set of achievement variables and the perceived benefits and costs of higher education. The mediating paths through the achievement variables are partly hypothetical. We have estimates of the mediating effect of school-type (16% of the

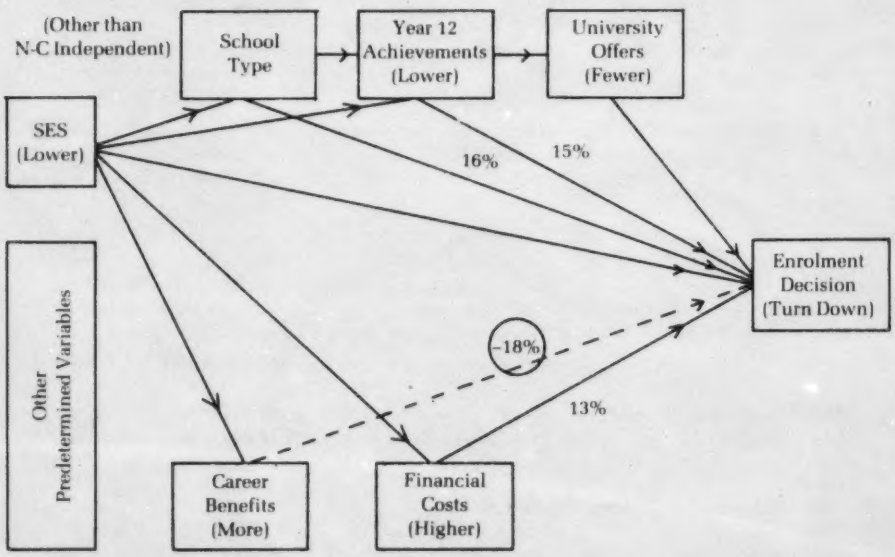


FIGURE 7:3
THE MAIN PATHS FROM THE SOCIO-ECONOMIC STATUS OF THE APPLICANT TO THE TWO-WAY DECISION

total SES effect) and of Year 12 achievements net of school-type (15% of the total). Our diagram further proposes, however, that some of the mediating effect of school-type passes through Year 12 achievements and that some of the mediating effect of both school-type and achievements pass through receipt of university offers. We base these hypotheses on what we know of the school-type and achievement effects.

On the lower part of the diagram we find that both costs and benefits mediate the effect of SES on enrolment decisions but that these effects are countervailing ones. Lower SES students perceived both more costs and more benefits from tertiary education. Their perception of the costs of tertiary study made them more likely to turn down offers, whereas their perception of the benefits made them more likely to take up the offers. Career benefits mediate about 18% of the total effect in one direction, costs about 13% of the effect, net of the mediating effect of benefits, in the other. With the countervailing effect of perceived career benefits (and one or two other tiny social-psychological effects) the direct or unexplained effect of SES on enrolment decisions remains quite large.

Financial concerns predominated in the open responses of young people from identifiably working-class families who had deferred or declined their VUAC offers.

"Monetary worries more than anything else kept me from returning to full-time study... an increase in allowances would make it a lot easier, particularly for those of us who are **not** middle class."

"At first I deferred the course hoping that my financial situation would improve or that I would have the chance to enter a profession that I liked. As my financial situation has not improved to an extent that I can go ahead with my course, I have let my deferment drop hoping that at some later stage I can go ahead. I was disappointed not to have been able to take up the course as I feel that it would have benefitted me greatly."

"I have deferred to save money for next year. I felt that unless I had a job that required the use of my intelligence my life would be stagnant."

Interestingly, because the effect runs counter to those in our summary model, a number of students from clearly middle-class families indicated that they were financially able to defer their VUAC offer for a year. This possibility of taking a year off is illustrated by our interview with Elizabeth.

Elizabeth's father was a company director and she went to a non-Catholic independent school. Here she achieved well, becoming a House Captain besides doing well academically. From Form 2 onwards, she had decided on a career in Social Work and found it easy to get into the institution of her first choice.

She deferred for several reasons which were closely associated with her social position:

(i) Her family had planned a long trip to Europe and she wished to go too.
(ii) She had led a very sheltered life where everything had been provided and felt that she had no life experience to use in her Social Work career.
(iii) Her mother had done everything for her and she wanted to see if she had any initiative.
(iv) Her parents were well off and money had been available freely (for everything from decorating her room to going out to dinner) so she wanted to work for a while to gain independence and feel under no obligation to them.
(v) She wanted to spend money earnt on expensive and "little dumb things" without being accountable to anyone but herself.
(vi) She would have time to read round her subject and also to do voluntary work which would assist in giving her a background to the course.
(vii) She heard that mature students with experience do better at tertiary institutions.

While Elizabeth had turned down her VUAC offer by deferring for a year, she had a

clear view of a desired career for which a university course was necessary. We received some comments from middle-class students, however, which illustrate an alternative perception, that the value of tertiary courses can be viewed as more generally educational and is not for them so closely related to obtaining a job. Thus a girl whose parents are both academics said:

"Job opportunities need not necessarily be connected to the course. I will always be able to find some secure job to fall back on. I don't have to worry about becoming old and untrained. I will be able to afford to try several different types of jobs if I want to which aren't necessarily well paid or likely to lead anywhere but will be interesting to try. I deferred to see what working life was like."

As one illustration of the chain of effects from lower HSC scores to receiving a less preferred college offer, the extended comment of a male whose mother is a seamstress and father a production worker is illuminative. For this working class young man, the instrumental value of a tertiary course is clearly evident.

"After getting a low HSC score I accepted an apprenticeship but did receive my 4th preference at (a country CAE). I didn't really think that it was suitable as it was in Applied Science and I am interested in electronics. As I wanted to do electrical engineering but didn't have the qualifications, I decided to continue in the apprenticeship and go to night school to improve. However, I've now decided to do TOP in 1981 so that I can start at a tertiary institution with the correct qualifications and get a degree so that I can become an electrical engineer with a good future and a good income."

Finally, as our interview with Elizabeth suggested, case study material sometimes does not fit neatly into the researcher's tidy statistical generalisations. Our interview with Wayne provides another example. Wayne comes from a working class family and his case partly fits our model in that financial problems were an important factor in his decision to defer his VUAC offer. However, Wayne holds a strongly altruistic, non-instrumental view of the value of a tertiary education.

Wayne gave financial difficulties as his main reason for deferring. He had been offered a university place and his parents couldn't support him in a flat near the university nor was he able to drive there. The university offered was his third choice, however, and Wayne said the he probably would not have deferred if he had got his first or second choice.

Wayne was born in Australia and so were his parents. He attended a Catholic school which had quite a good academic record. At HSC he took all arts subjects except Earth Science. He seemed particularly interested in Politics. Although he had done quite well at school he did not do well enough at HSC to be offered either of his first two choices. His whole outlook did not fit well with exam techniques. At school he always took a long time over pieces of work and looked at arguments from many points of view. Essays were always handed in late. Wayne felt that this attitude did not provide the skills required by public exams and he believed that this was the reason for not doing as well as expected.

Wayne had chosen his HSC subjects because he liked them. He had no career plans in mind at all. He believed that an Arts course at university was the only means of continuing his interests. In fact, he had no desire to work at all and did not want to join in with the pattern of having a 9 to 5 existence, with a monotonous job, and then getting tied down with marriage at about 25. He seemed to imply, however, that these things were inevitable.

Ironically, perhaps, it had been money that had forced him to defer. He said quite often that "money is a big hassle." His parents (who had up till then let him do much as he liked) were unable to support him living near the university. His mother, particularly, wanted him to work. There was also no history of tertiary education in the family and his two older siblings had gone straight from school to work.

Consequently, Wayne had been at work for a few months. At the time of the interview, however, he was out of work. He said it was incredibly hard to find jobs if you have long hair. Also, he had the experience of being one of many people attending interviews even for menial and low-paid factory jobs. He had eventually managed to get a factory job

through a friend. He hoped to save 5,000 dollars, enough to buy and run a car.

Wayne plannd to take up his deferred offer in 1981 and the money saved would see him through first year. Then, depending on his university experiences, he may defer again later.

Family Background: Ethnicity

Having taken into account the fact that the applicants' ethnic background modifies the relationship between SES and enrolment decisions, there remains a clear 'main effect' of a 'non-English' family background. Applicants whose fathers were born in 'non-English' speaking countries were roughly 10 percentage points more likely than those with 'Australian' fathers to take up their VUAC offers. (The precise estimate varies a little according to whether or not we include the interaction term, see Table 5:2)

The effect of a 'non-English' family background is strongly mediated by our block of social-psychological variables (Figure 7:4). Only about 21% of the effect remains unexplained after all these variables are taken into account. The strongest mediating effects are due to the stronger perceptions of the career benefits available from a tertiary education among 'non-English' students (accounting for 43% of the total effect) and the higher academic expectations (in terms of interest and liklihood of success) of this group (10%). There is also a large joint effect (21%) from the group of 'other' social-psychological variables (convenience of location, social aspects, etc.). Thus, the perceived career benefits of tertiary study predominated in their influence on 'non-English' students when they were making a decision on their VUAC offer.

Because we focussed on those who deferred and declined when we were gathering case study material, we have little to illustrate this strong effect of ethnicity in the direction of taking up the VUAC offer. Comments from young people from European families who deferred provide, however, suggestions of a strongly instrumental approach

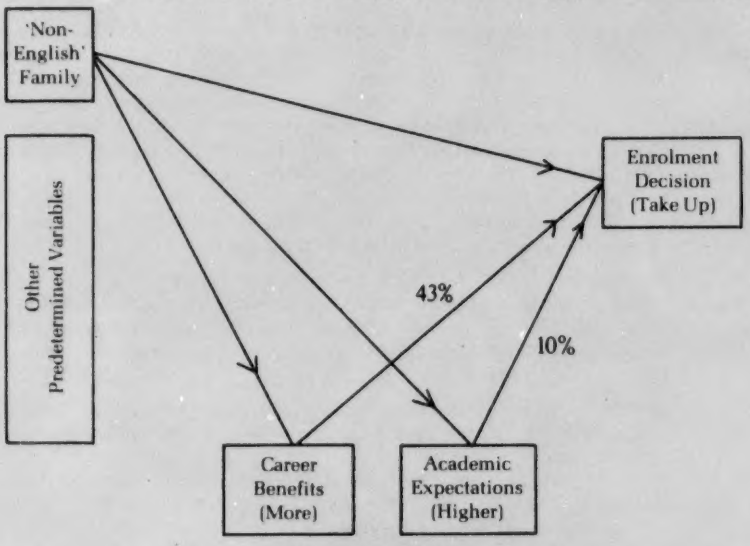


FIGURE 7:4
THE MAIN PATHS FROM A 'NON-ENGLISH' FAMILY BACKGROUND TO THE TWO-WAY DECISION

to higher education. Thus a Yugoslav girl whose parents are factory workers wrote:

"The course I applied for was my first preference and I'm very interested in it and it will lead to a good career. Due to personal circumstances I had to defer one year but the college kept my place for me and my parents and I are looking forward to me starting."

As we have shown, this perception of the career benefits from tertiary education partly overlaps with the perception of encouragement by significant others. This effect is, however, not symmetrical. Much of the mediating effect of significant others appears to pass through the perception of career benefits, but the reverse is not the case. Thus it appears that the children of European immigrants may develop their instrumental commitments to tertiary education largely in ways other than from the encouragement of parents, teachers and peers. This suggests that there may be a variety of complex tensions in European families when the aspirations of parents or their children clash with the adolescent's needs for autonomy on the one hand, and the traditional cultural values of the family on the other. Thus a boy from an Italian family wrote:

"Due to the expectations of an Italian family in Australia (plus the fact that my brothers and sister have achieved their ambitions due to a 'good education' here) I've been conditioned and feel obliged to 'get on' and live up to the family tradition. – and yet, I do almost resent this stereotyping yet I realise this plays a very important part in our lives and is an unavoidable fact of life."

Contrast this against the comments of a Greek girl who declined her offer because it was unsuitable for her intended occupation. She had come to Australia and left her family behind. With the move, she assimilated new values and strongly felt the need to abandon the old ones.

"Although I didn't take up my place (5th choice) I have a deep, almost religious, conviction that education should never end. Also it will result in more financial rewards and more stimulating careers. I have a chip on my shoulder which won't allow me to accept my parents and family's view back in Greece that a women's place is in the home: barefoot, pregnant and ignorant."

The likelihood of those students whose fathers were born in 'other English' speaking countries (very largely Great Britain) taking up the VUAC offer was strongly associated with their socio-economic background. In fact, as we have explained, our estimate of whether this likelihood is greater or less than for those from 'Australian' families at the average SES score depends on whether or not we include the interaction term in the equation which provides the estimates. We have illustrated this in Figure 7:5 by showing an interaction between SES and 'English' background. The interaction implies that no conclusion about transition of the 'other English' groups can be drawn without considering as well their SES. Two questionnaire comments illuminate the perceptions and expectations that might contribute to these SES differences.

Firstly, a boy with English working class parents commented:

"I felt the need to gain some work experience, to earn some income and contribute to the household (I would be the only one not working). I felt that full-time student life is an unrealistic basis for gaining knowledge to apply to working situations and is totally alien to the lifestyle of all those around me."

In contrast, a boy who came from a middle class background and whose parents were a librarian and a speech therapist showed a completely different perception of the value of a college or university course:

"I deferred from my present course to go back to school and complete TOP but with different subjects. I did this because I had done TOP a year earlier than normal and because I really wanted to go to a good university to do Arts/Law. Because my parents and I wanted me to have a university education and because I did TOP, I needed to get exceptional marks to get in. Because I was young and done TOP before I believed this would give me the experience needed to get those marks. Also I felt the more subjects I

had would help me in the future with job and course prospects and the possibility of gaining interesting employment with a good income."

Individual Inequalities: Direct Effects of the Mediating Variables

While the complex patterns we have described in accounting for the main group inequalities in access to tertiary education in Victoria are challenging, and while the inequalities themselves are by no means trivial, our analysis in the last section of Chapter 6 showed that individual differences in enrolment decisions were much larger than group differences. This is not to say that the policy implications of individual inequalities are any greater, simply that they account for more of the variability in students' enrolment decisions than do any group inequalities we have measured. Predominant social and political concepts of inequality vary enormously, and change and evolve as a society's concerns become more complex (Coleman, 1975; Halsey, Heath and Ridge, 1980). As we have mentioned previously, it might well be that a current consensus in Australia would reject any noticeable group inequalities in access to higher education but would sanction, even demand, a significant level of individual inequality. Thus what we have characterised as instrumental and meritocratic perceptions among those who took up rather than turned down offers of places in higher education seem to be aspects of individual inequality in access which are presently expected by Australian society. It is perhaps not too gross a caricature of a present consensus to suggest that it is bounded by the views that higher education is primarily for those who perceive and expect a direct vocational benefit, and who have demonstrated their suitability by high academic achievements in the past. If this is indeed the system we want, then self-selection appears to be helping us to get it.

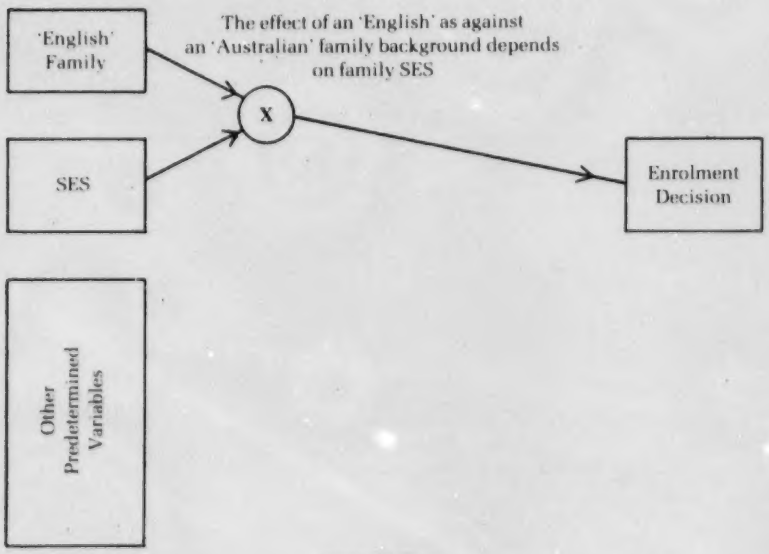

'English' Family
The effect of an 'English' as against an 'Australian' family background depends on family SES
X
SES
Enrolment Decision
Other Predetermined Variables

FIGURE 7:5
THE MAIN PATH FROM AN 'ENGLISH' BACKGROUND TO THE TWO-WAY DECISION

In our judgment, the most salient, reliable and important direct effects of the intervening variables in our analyses are the students' Year 12 achievements, receipt of an offer from a university rather than a college, and perceptions of the career benefits and the financial costs of a tertiary education. We summarise and illustrate each of these direct effects below.

Year 12 Achievements

From our basic model (Chapter 3) we estimated that the total effect of HSC course type (the simple contrast between science and non-science) was -0.107, and that the direct effect was -0.088. The difference is that portion mediated by HSC score. Also from this model we estimated that the direct effect of HSC score was -0.0019. In Chapter 4 we disaggregated the course type contrast and found that turning down was most frequent among those with 'unclassified' HSC courses. We obtained very similar estimates for the science/non-science contrast and HSC score from our survey data. We also calculated a sheaf co-efficient for Year 12 achievements from the survey data (Table 6:3). Its value of -0.25 showed that the block of two Year 12 achievement variables followed the perception of career benefits and was the second largest direct effect in the model.

Translating the unstandardised estimates from the basic model, we found that non-science students were about 11 percentage points more likely than science students to turn down their VUAC offers. Only about 18% of this effect was mediated, in this model, by the higher HSC scores of science students. Further, independent of course type, those students who scored a bare 'pass' at HSC (200 marks in aggregate) were about 23 percentage points less likely to take up their VUAC offer than those who were at the lower boundary of the group who scored, on average, an A grade (320). It seems clear that self-selection is operating meritocractically, although whether this results from greater perceptions of self-competence among young scientists and high achievers, from the greater opportunities that a science course at HSC might open up for a student, or from a more general underlying tendency for some, more than others, to seek cognitive complexity (Spaeth, 1976) remains for further investigation.

Our questionnaire and case study material contain quite a number of references to the effects of lower HSC scores and 'mixed' HSC courses on the decisions students took on the offer of a college or university place. Rarely, however, did our respondents discuss this in terms of a general feeling that they would be unable to cope with the academic demands of higher education. One boy who declined, however, wrote:

> "I made the wrong choice. I applied for Information Processing and basically the subjects in HSC did not lead on to this course. They were English, History, Economics and Biology and I did not think that I could cope without a good mathematical background."

And a girl who declined wrote that:

> "I found HSC difficult even though I passed. I did not feel that I could handle the pressures of work placed on a student studying on a tertiary level."

It was common, however, for those who had found school difficult and were not highly motivated to anticipate that the workload would be heavy and to defer or decline their offer of a place. An example comes from our interview with Ronald.

Ronald didn't enjoy 6th form much and did it "just for something to do and to please my parents who thought that there would be more openings with HSC".

He did not like studying and found 6th form hard. His view of studying for HSC was that "it was non-stop work and too much homework. You just took it home and did it and the next day there'd be some more. The teachers expected 70 hours a week and it was too much. It was supposed to be 30 at school and 40 at home which I couldn't manage."

Ronald had no career in mind except farming but filled in the VUAC form because the school had encouraged him to and "in case I changed my mind." He was already thinking twice about going to university, however, because he thought "it would be too much work."

Thus, although Ronald was offered his first preference he did not hesitate to defer as he "had strong second thoughts about going on". He deferred and then declined. He's now farming and doing apprenticeship classes in Woolclassing and Welding in the evening which "are much more practical and not such hard academic work".

Feelings of a lack of academic self-confidence were also presented to us in terms of a need for a break after a year's hard 'slog' at HSC. A typical comment was:

"I felt I needed a break from studying after completing HSC. I felt drained and not capable of getting back in to the routine of hard studying. . . I just needed a total break from the system."

Our other main group of comments relating Year 12 achievements to enrolment decisions captured aspects of the process that suggest the mediating role of preference level. It is not surprising that some students deferred or declined in order to return to school for a second attempt at HSC and another try at a prized high status course or institution. Three comments were as follows:

"I wished to do the Pharmacy course which was my first preference. I decided therefore to return to school as I was not offered a place in 1980 and am now studying another year of HSC."

"I was offered a place in Science whereas my first choice was Medicine. I deferred the course as I was not only too young to do the course but also I decided to return to school to get higher marks to gain admission to Medicine which is the only course I really wanted to do."

"As far as I was concerned there was only one place which offered me the course I wanted to take. Since I did not get there on my first attempt there was really no choice in the matter, and my parents encouraged me to attempt HSC again and try to beat the 10% loading."

Finally, a small number of applicants declined an offer because they had already taken a job or a TAFE course, having decided that they wouldn't get an offer through the VUAC because they had 'failed' HSC. While the number affected were, of course, very small this hidden barrier to access perhaps deserves some administrative attention.

"At the time of my offer being sent I had already enrolled and commenced a TAFE course. I had failed HSC and didn't expect any offers and also doubted my capabilities in successfully completing the VUAC course."

Receiving a Non-University Offer

In Chapter 4 we presented in detail the direct effects on enrolment decisions of receipt of an offer from various kinds of institutions. Overall, applicants were about 3 percentage points more likely to turn down an offer from a metropolitan CAE than from a university. They were also more likely by about 9 percentage points to turn down an offer from a regional CAE, and more likely by about 10 percentage points to turn down a teachers' college offer. There were, however, marked differences in patterns of deferring and declining which these figures mask. As against accepted full-time, offers from regional CAEs were most often declined (a difference of almost 27 percentage points above universities, other things being equal) followed by offers from metropolitan CAEs (16% above university offers) and teachers' colleges (14% above universities). On the other hand, teachers' college and university places were most often deferred as against accepted full-time, followed by offers from regional CAEs (a point difference of 5% fewer than offers from universities, other things being equal) and metropolitan CAEs (a point difference of

10%). We have no follow-up data, unfortunately, on the numbers of students who do actually take up their places after deferring. The figure of 25% is often mentioned, but it will almost certainly vary among difference types of institutions. Analyses we report in the final section of this chapter show that many students who deferred are in occupations, or are taking coures (eg. hospital nursing) which suggest that they will not return immediately to a college or university.

We were unable to explain very much of this effect of institution on enrolment decisions by the preference level of the offer made to the student. That is, while it would be quite reasonable to expect that more applicants would receive less preferred offers from colleges as against universities, preference level accounted for very little of the direct effect of institutions that we have described.

Why then do applicants turn down college places more often than university places, irrespective of the preference level of the offer? Part of the effect is undoubtedly due to uncertainty about the likelihood of getting a job after graduation in certain professions, notably teaching. In their comments to the open questions, many of our respondents gave this as a major reason for deferring or declining an offer of a teacher's college place. (Although our analysis in Chapter 4 suggested that most students in this group might initially defer for a year). Two questionnaire comments were as follows:

"The vocation I planned to undertake was hard for me to accept because the teaching positions available are very limited. A lot of teachers and others put me off teaching because of the job prospects. I was very interested, but when a job as a bank clerk came up and I had to make a decision, I felt more secure taking an available job. I also believed that if I worked for a year it would make me more certain of which way I wanted to head."

"Due to the instability of the vocation of teaching, I virtually decided to decline the offer that VUAC made straight away. However, I deferred instead, just in case I changed my mind throughout the year (however I haven't). Also, reports from many many people have discouraged me from taking this particular course due to the lack of job opportunities once the course is finished."

Aside from job opportunities associated with certain kinds of institution, our case study material offers few clues to the reasons for this strong institutional effect. The status of universities was occasionally mentioned quite specifically:

"I only wanted to do the course at University because it has a great deal of prestige if you do it from there and it's no good doing it anywhere else if you want to get on in the academic world as I do."

Other respondents expressed a conflict between their desire to stay in the country to study and their perceptions of the regional CAEs as having a lower status or offering fewer job opportunities. Two country applicants who had deferred wrote:

"I only applied to country CAEs and not (metropolitan) courses as I had heard that in the country there is a smaller more intimate atmosphere and more possibility of one-to-one staff/student contact."

"Due to my love of country life a (metropolitan) university was not acceptable to me as I had spent 4 years in Melbourne at school. Thus, I chose (a country CAE). Then due to the lower acceptability of its course I decided a job may be difficult to obtain after course completion and so this would mean wasted years."

Vocational uncertainties associated with some CAE courses, and perceptions of the institution or its courses as having a lower status are two possible reasons for our finding of a higher rate of turning down offers of college places. Yet others which occur to us are the restricted range of courses offered in the CAEs (particularly the absence of the elite professional courses in Medicine, Dentistry, Law and Veterinary Science), the possibility that the student life style is perceived as being less attractive at CAEs and, again perhaps, a

more consistent academic orientation or greater cognitive complexity among university applicants.

Perceived Costs and Benefits of Tertiary Education

As a block, the social-psychological variables in our study added much more than other blocks to the prediction of the two-way enrolment decision. The most salient social-psychological variables were the perceived vocational benefits of a tertiary education and the perceived costs. Perceived vocational benefits had the largest direct effect of any single variable we have considered. The direct effect of perceived costs was also relatively large. It is well to recall the items which contribute to these composite measures. The Career-benefits scale is composed of items which measure perceptions of the job opportunities which would result from completing the tertiary course, the perceived interest in resulting jobs and the financial and status benefits. The Costs scale consists of three items: the extent to which financial support was perceived to be a problem, and anticipated reliance on TEAS (contributing postively) together with anticipated reliance on parents for financial support (contributing negatively to the scale). The item content of the scales therefore suggest that instrumental motives and practical concerns contributed strongly to students' decisions whether or not to go on to college or university.

Many questionnaire respondents, and some we interviewed, gave their uncertainty about job prospects at the end of a 3 or 4 year course as a major reason for turning down the VUAC offer. Mark, one of our interview group, expressed this view strongly about a less preferred offer:

> "I sort of looked at the offer but it wasn't going to do anything for me. I thought that I wouldn't be qualified for anything at the end of the four years. You know, I'd have had four years more education but not qualified for anything in particular and there is no guarantee that there is going to be a job at the end of it. And I thought that in four years' time it's going to be a hell of a lot worse – maybe I'd better grab something now!"

He added:

> "If I could do some kind of course that I would be able to get into what I wanted at the end of four years, even if I wasn't earning a cent at the end during those years, I would be happy to do that, but I am not willing to give up income to do something that I don't want to do anyway."

Overall, about 20% of respondents who deferred or declined wrote that the uncertainty of getting a job after completion of a course was deterring them. Here are three other typical comments:

> "I declined the offer because I had an offer from a Catholic teachers' college which guaranteed me a job offer after I finished the course."

> "There was the uncertainty of getting a job even if I did complete the course and as a job was available to me after leaving school I decided to accept it instead of taking the course offered to me."

> "The way things are going at the moment the liklihood of finding a steady well-paying job after completing a tertiary course seemed not exactly an easy thing to do. Therefore I decided to go to where there will be large openings in the future – the computer industry."

Lack of finance was, however, the most frequent reason given in the open questionnaire comments for deferring or declining. It can be argued that lack of finance is a convenient and socially acceptable reason to put down on a questionnaire, however the directness and apparent honesty of many of the comments are persuasive. Perhaps the most direct comment was from a TOP student. She described her reasons for deferring, thus:

"The prime and only factor that influenced my decision to defer (regarded as a decline for they would not hold a position in the course for two (maybe more) years) was my financial situation. At the time I was eligible for full TEAS, being independent but it would not have been enough support. I will have to depend on my savings and TEAS (?) if I do return in 1982."

Many respondents mentioned either conflict with or concern for their parents in relation to their perceived financial problems. Three comments were:

"The main factor affecting my decision was my financial problem – lack of support from my parents. I repeated my HSC after receiving a compensatory pass and had returned to school to enable me to undertake a course in Physical Education. On completion of the 2nd HSC I found lack of parental support and encouragement for further studies. i.e. get out and support yourself."

"I was fed up with depending on my parents (even though it didn't worry them). Now I am earning my own money and now I can buy a car, go on holidays and spend my money."

"At first I was just going to go straight from HSC to college but mum and dad could not afford to keep me so I decided to defer for a year and save some money to support myself."

Finally, finance was often mentioned when respondents were explaining their reasons for preferring a course of paid practical training or part-time support for tertiary study rather than a full-time course. For females, the choice was frequently a hospital nursing course, for males it was often clerical work in the Public Service. We finish this section with five scattered examples which serve to introduce our final topic: what do those who defer or decline do during the year following their decision?

"I think the main factor deterring me from a university course was the fact that I wouldn't have very much money for 3 or 4 years with no guarantee of a job on completion anyway. I also knew that I was going to get married and even if we could afford for me to study, I would probably only want to work 2 or 3 years after completion of the course before I wanted to start a family. This is why nursing seemed to be a more preferable career for me with its paid training and better job prospects."

"I deferred because I had no finance. Since then I have got a job in the Computer Industry and I am being sent on courses which will enable me to get promotion. I shall be declining my offer at the end of this year."

"As I could not afford to do the Commerce course at (a university) I got a job in a printing firm and they will be paying for me to go next year."

I have just joined the Public Service and I hope to go to University eventually but the Public Service will pay me to go and it will be related to my job – this will be much more satisfactory than being an impoverished student with no guaranteed job at the end."

"I gave preference to Dental Therapy compared to a degree in Biological and Health Science due to finance and job prospects. A cadetship was offered by Dental Therapy and work was guaranteed at the end of the Cadetship."

Destinations of those who Deferred and Declined

From the data supplied to us by the VUAC we know that 5034 applicants to whom offers were made either declined or deferred them, this is 31.1% of our target population of VUAC applicants. In this section we deal with the question: 'What did those who turned down the VUAC offer do instead?' We were particularly eager to establish how many had decided to continue with further education by enrolling in a course of study for which entry was not controlled through VUAC. It should be noted that in this section we include the applicants from Tertiary Orientation Programs as well as HSC students.

TABLE 7:1
THE DESTINATIONS OF THOSE WHO TURNED DOWN THEIR VUAC OFFERS (HSC AND TOP STUDENTS)

Destination	Enrolment Decision					
	Defer		Decline		Total	
	%	Weighted N	%	Weighted N	%	Weighted N
A. Those enrolled in non-VUAC Post-secondary courses and Secondary school						
Nursing (not Preston Institute or Lincoln Institute)	5.5	16	10.5	45	8.5	61
Institute of Catholic Education	2.6	7	11.0	48	7.6	55
Non-VUAC Tertiary Institution (e.g. Victorian College of the Arts, Agricultural College)	1.3	7	2.1	9	1.8	13
Non-VUAC course at VUAC Participating Institution (e.g. Chiropractic)	0	0	2.8	12	1.7	12
Interstate or Overseas Tertiary Institution	1.9	6	3.2	14	2.7	19
Other Post-Secondary Institution (William Anglis Food Trades School, Dental Therapy College)	1.5	4	1.3	6	1.4	10
Private Commercial College	0.9	3	1.3	6	1.2	8
Other Study (e.g. Commercial Pilot's Course)	1.9	6	0.7	3	1.2	8
Enrolled in Secondary School	5.2	15	5.9	26	5.6	41
Total Enrolled in Course	20.9	61	38.9	169	31.7	227
B. Those not enrolled in any course						
Working full-time	56.5	162	45.9	198	50.1	359
Working part-time	9.3	27	4.7	20	6.5	47
Not employed	13.3	38	10.5	45	11.6	83
Grand total	100.0	286	100.0	431	100.0	717[a]

Note: a. The discrepancies in this table in both the percentage and weighted N across rows and down columns are due to rounding errors.

After resolving a small number of inconsistencies between the VUAC record of the outcome of the students' applications and their response to Item 6 on the questionnaire we found that 717 of our questionnaire respondents had either declined or deferred their VUAC offer. The distribution of present occupations is shown separately in Table 7:1 for those who deferred and those who declined, and for these two groups combined. The data are appropriately weighted.

We can see that those who turned down offers were not all entirely rejecting the possibility of further education. Overall, 31.7% of those who declined and deferred were enrolled, in 1980, in some course of further education or training. Nursing and teacher training at the

colleges of the Institute of Catholic Education were the most frequently cited. Also, a considerable number reported returning to school for an additional year of secondary education.

Those who declined were far more likely to be involved in further education (34.0%). This suggests that many of those who declined the offer from the VUAC had a definite commitment to the alternative course they took up. However, just less than one in six of the deferrers were also involved in courses of further education. Thus, a substantial number of these also had a strong commitment to the non-VUAC course, and their deferral may have been made in the expectation that it was highly unlikely they would return to the VUAC course in a year's time.

Among those who turned down the offer, the proportion in full-time employment was 50.3%, with 6.4% in part-time employment. Of the 405 employed full- and part-time, 196 or 48.4% were employed in occupations described as 'clerical' in the 16 point ANU occupational scale. This suggests that the majority of those who turned down the opportunity for further study were not tempted to do so by immediate prospects of highly attractive employment. The high proportions not employed should be noted. Overall, the figure is 11.6%, partly inflated by the higher rate of non-employment among students who deferred, some of whom may not have been in the potential workforce seeking jobs.

These final points should be borne in mind when drawing conclusions about the relative openness of further education from the remainder of our report. Not all those who refused the offer of a place through the VUAC were refusing the opportunity of further education. If the Victorian Agricultural colleges, the Victorian College of the Arts and the Catholic Teachers' colleges were to be added to the VUAC system, the apparent rate of continuing with tertiary education would increase slightly. As well, small but significant number of respondents to our survey were continuing with other forms of post-secondary education, such as hospital-based nursing courses and courses offered by TAFE colleges. We do not believe, however, that our conclusions would be affected in a major way if these students were to be included within the compass of 'taking up' an offer. The background factors of sex, home location, socio-economic status and ethnicity would remain as important factors whose small but persistent effects would be of great significance for any discussion of equality of opportunity in post-secondary education. Further, we would anticipate that the individual differences arising from Year 12 achievements and attitudes towards career benefits and financial costs would remain as principal causal factors, and salient areas for policy concern.

Notes

1. The 'social theory' which underpins various versions of a model of selection into various forms of higher education and many vocations by measured achievement or ability was perjoratively dubbed 'meritocratic' by Michael Young (1958). We have been counselled to use a more neutral adjective such as 'meritocentric', but as 'meritocratic' has gained such widespread useage, we have chosen to continue with it. Certainly the literal and pejorative meaning seems to have slipped a little, and Michael Young's neologism now seems to be used to mean simply 'based on merit'!
2. It should be emphasised that this and the subsequent figures are not strictly path models. They are simply diagrammatic representation of the **main** indirect and direct paths from one particular pre-determined variable to the enrolment decision. The percentages are rough estimates only of the relative size of the important mediating influences on this one variable. They should not be expected to sum to 100%.

APPENDIX 1

THE SURVEY QUESTIONNAIRE

MELBOURNE STATE COLLEGE
TERTIARY EDUCATION RESEARCH UNIT

You can remove this number, but you may get a reminder.

SURVEY OF 1979-1980 COLLEGE AND UNIVERSITY APPLICANTS

The purpose of this short survey is to find out about the needs of young people who applied through the Victorian Universities Admissions Committee for further education in 1980. Your answers are important because they will help us to understand why some students decide to go on with further education and others decide not to. In this way you can help the Tertiary Education Commission (who commissioned the survey) to recommend the kinds of courses and institutions that students really need.

YOUR ANSWERS ARE CONFIDENTIAL. Your name is never used except to post out a letter to you. For each question, please tick the box next to the answer that best describes you or fill in the spaces as required. The survey takes about ten or so minutes to answer. Your replies will be very important.

Thank you. The transfer comes out in bright colours. I hope you like it.

Gerry Elsworth ('phone 03-3418382)

1. What educational institution, if any, are you attending at present?

   Institution or school (in full) _____

   Course (in full) _____

   Is your course full-time ☐ or part-time ☐

   Not enrolled in any course at present ☐

2. Do you think you will be enrolled in a college or university course in 1981?

   Yes, full-time ☐ Yes, part-time ☐ No ☐ Unsure ☐

3. When did you make up your mind about whether or not to continue with further education after school?

   During primary school ☐
   During forms 1 to 3 of secondary school ☐
   During forms 4 or 5 ☐
   During form 6 ☐
   After leaving school ☐

Please turn over

4. What course was finally offered to you through VUAC in 1980?

   Course (name in full) _____

   Institution (name in full) _____

5. What preference number did you give this course on the last occasion on which you told VUAC your preference order for courses. Please write '1' if most preferred, '8' if least preferred, approximate number if unsure.

   Preference number of final offer ☐

   Tick this box if final course offered was not on your list of preferences ☐

6. What did you do when you received the final VUAC offer?

   Accepted the offer full-time ☐

   Accepted the offer part-time ☐

   Deferred ☐

   Declined or did not accept offer ☐

---

7. In what year did you take your latest attempt at HSC, TOP or other end-of-schooling qualification?

   ☐1☐9☐☐

---

8. How difficult was it for you to decide whether or not to accept the final course offered to you through VUAC in 1980?

   A difficult decision ☐ An easy decision ☐

---

9. When you were making your decision about the VUAC offer, how definite were your vocational plans?

   I knew exactly the occupation I wanted ☐

   I was trying to decide between 2 or 3 occupations ☐

   I was considering quite a few occupations ☐

   I did not have any specific occupations in mind ☐

10. If you knew exactly the occupation you wanted did the course offered meet the educational requirements of that occupation?

    Yes ☐ No ☐ No firm intended occupation ☐

Below are some factors which might have influenced your decision on whether to take up the VUAC offer of a place in a university or college in 1980. Firstly, please tick one box on the scale to show how the statement best describes you when you were making your decision. (For example, if in Question 11 the college or university was very convenient for you, tick the box on the far left of the scale. On the other hand, if it was somewhat inconvenient tick the second box from the right. All the scales with five boxes work in this way.) Secondly, indicate how strong the factor was in influencing your decision and whether it made you more or less likely to accept the offer. At the end of these questions there is a section for comments.

11. How conveniently located was the university or college offered to you? (tick one box on the scale)

Very convenient ☐☐☐☐☐ Not at all convenient

This had a strong☐ weak☐ influence, and made me more☐ less☐ likely to accept the offer. (Tick here if this factor was of no influence☐)

12. How interesting did you think the course offered would be?

Very interesting ☐☐☐☐☐ Not at all interesting

This had a strong☐ weak☐ influence, and made me more☐ less☐ likely to accept the offer. (Tick here if this factor was of no influence☐)

13. How attractive did you think the social aspects of student life would be?

Very attractive ☐☐☐☐☐ Not at all attractive

This had a strong☐ weak☐ influence, and made me more☐ less☐ likely to accept the offer. (Tick here if this factor was of no influence☐)

14. How did you feel about your prospects of success in the course offered to you?

Very confident of success ☐☐☐☐☐ Not at all confident of success

This had a strong☐ weak☐ influence, and made me more☐ less☐ likely to accept the offer. (Tick here if this factor was of no influence☐)

15. How heavy did you think the demands of studying would be in the course offered?

Very heavy ☐☐☐☐☐ Not at all heavy

This had a strong☐ weak☐ influence, and made me more☐ less☐ likely to accept the offer. (Tick here if this factor was of no influence☐)

16. How many job opportunities were open to you on leaving secondary school?

Many opportunities ☐☐☐☐☐ No opportunities at all

This had a strong☐ weak☐ influence, and made me more☐ less☐ likely to accept the offer. (Tick here if this factor was of no influence☐)

please turn over

17. How many job opportunities did you believe would be open to you if you finished the course offered by VUAC?

Many opportunities ☐☐☐☐☐ No opportunities at all

This had a strong☐ weak☐ influence, and made me more☐ less☐ likely to accept the offer. (Tick here if this factor was of no influence☐)

18. Did you think that, in ten years' time you would have a higher income if you completed the course offered by VUAC, or would it make no difference?

Much higher income ☐☐☐☐☐ No difference

This had a strong☐ weak☐ influence, and made me more☐ less☐ likely to accept the offer. (Tick here if this factor was of no influence☐)

19. Did you think that you would get a more interesting job if you completed the course offered by VUAC, or would it make no difference?

Much more interesting ☐☐☐☐☐ No difference

This had a strong☐ weak☐ influence, and made me more☐ less☐ likely to accept the offer. (Tick here if this factor was of no influence☐)

20. Did you think that you would have a job held in higher esteem if you completed the course offered by VUAC, or did you think it would make no difference?

Much higher esteem ☐☐☐☐☐ No difference

This had a strong☐ weak☐ influence, and made me more☐ less☐ likely to accept the offer. (Tick here if this factor was of no influence☐)

21. At the time you took the decision on the VUAC offer, how many of your friends were going on to college or university?

All friends going ☐☐☐☐☐ No friends going

This had a strong☐ weak☐ influence, and made me more☐ less☐ likely to accept the offer. (Tick here if this factor was of no influence☐)

22. In general, did your parents (or guardians) encourage or discourage you from taking the course?

Strongly encouraged ☐☐☐☐☐ Strongly discouraged

This had a strong☐ weak☐ influence, and made me more☐ less☐ likely to accept the offer. (Tick here if this factor was of no influence☐)

23. In general, did your teachers encourage or discourage you from taking the course?

Strongly encouraged ☐☐☐☐☐ Strongly discouraged

This had a strong☐ weak☐ influence, and made me more☐ less☐ likely to accept the offer. (Tick here if this factor was of no influence☐)

24. How large a problem did you expect financial support would be during your course?

Very large problem ☐☐☐☐☐ No problem at all

This had a strong ☐ weak ☐ influence, and made me more ☐ less ☐ likely to accept the offer. (Tick here if this factor was of no influence ☐)

COMMENTS Please use this space to tell us more about the important factors which influenced your decision to accept, decline or defer the course offered to you. Were there other important influences for you?

25. When you were considering whether or not to accept the course offered to you, what did you expect would be your main source of finance during the course? (tick one box in each row)

	Only source of finance	Major source of finance	Minor source of finance	No finance expected from this source
Tertiary Education Assistance Scheme (TEAS)	☐	☐	☐	☐
Support from parents	☐	☐	☐	☐
Regular full-time job	☐	☐	☐	☐
Regular part-time job	☐	☐	☐	☐
Casual work	☐	☐	☐	☐
Wife or husband's income	☐	☐	☐	☐
Other source of income (Please specify and tick box) _____	☐	☐	☐	☐

26. Was it necessary for you to leave your parents' home if you accepted the VUAC offer?

Yes ☐ No ☐ Not living with parents at the time ☐

please turn over

27. Indicate for the subjects you took in your last year of secondary education the subject name and your examination grade. If you took more than five subjects, give details of the best five.

Subject	Examination Grade
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

28. Indicate the type of school you attended during your final year.

State High School ☐
Catholic School ☐
Independent Non-Catholic School ☐
State Technical School or College ☐
Other (specify) _____ ☐

What suburb or town is the school in? _____

29. Please give the following information about yourself:

Male ☐ Female ☐ Year of Birth (fill in boxes 1 9 ☐ ☐)

Postcode of Home Address ☐☐☐☐

30.

	Brothers	Sisters
How many older brothers and sisters do you have?	☐	☐
How many younger brothers and sisters do you have?	☐	☐
How many of your brothers and sisters have ever begun a course at a university or college?	☐	☐

31. In which country were you and your parents born?

Father _____

Mother _____

Yourself _____

If born overseas, how long have you lived in Australia?____years

32. How much education have your parents or guardians had?

	Father	Mother
Completed university or college degree	☐	☐
Completed other tertiary or professional qualification (eg. accountancy, nursing, teaching diploma)	☐	☐
Some university or similar college study	☐	☐
Technical Trade Certificate or other special training, eg. secretarial course, after secondary school	☐	☐
Completed form 5 or 6	☐	☐
Completed form 3 or 4	☐	☐
Completed form 1 or 2	☐	☐
Primary School	☐	☐
Other (please specify and tick boxes)		
_____	☐	☐

33. Fully describe your and your parents' (or guardians') present or last main paid occupation. (e.g. deputy manager in suburban bank branch, electrical fitter in car factory, self-employed builder with two employees, primary teacher)

Father _____

Mother _____

Yourself _____

Is the person presently employed in a full-time or part-time job, or is the person not employed at present?

	Not employed at present	Presently employed full-time	Presently employed part-time
Father	☐	☐	☐
Mother	☐	☐	☐
Yourself	☐	☐	☐

34. What sort of occupation do you aim to have in ten years' time? _____

_____

_____

PLEASE RETURN THE SURVEY IN THE ENVELOPE PROVIDED. THANK YOU FOR YOUR HELP.

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